THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

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WITH the General Sessions for the Fortieth Annual Convention planned and well-ordered, we turn to special features to be offered in New York City during the week of July twentieth. May we now call your attention to THE DIAGNOSTIC CLINIC, a feature introduced with success in connection with the Cleveland Convention last year. The opportunity which this clinic offers is one of the important things of the convention.

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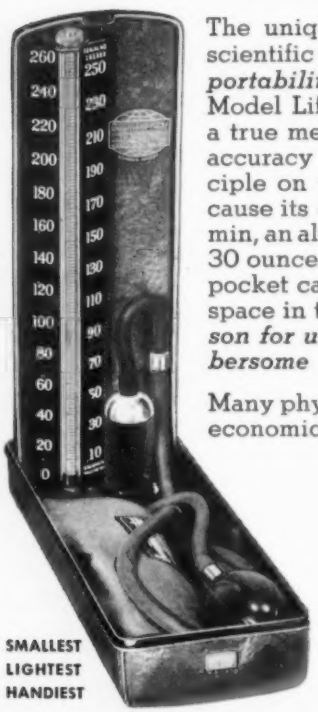

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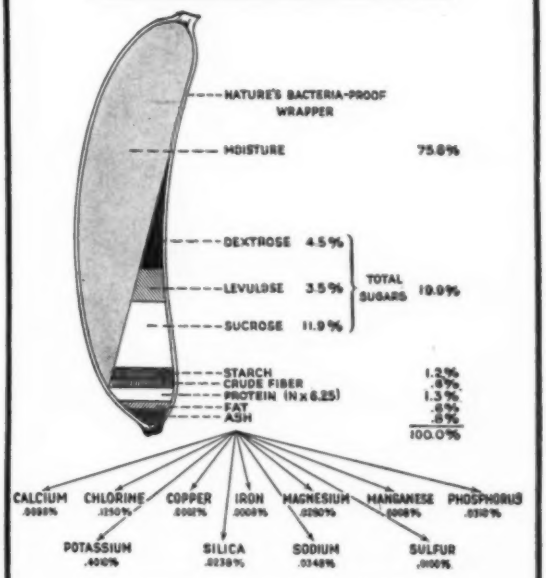

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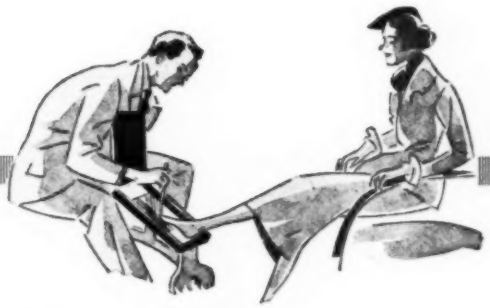

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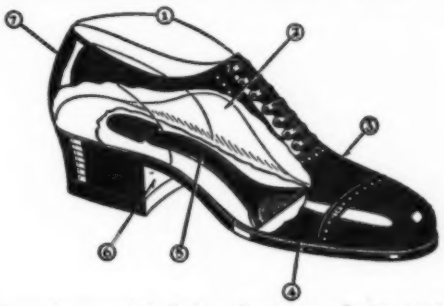

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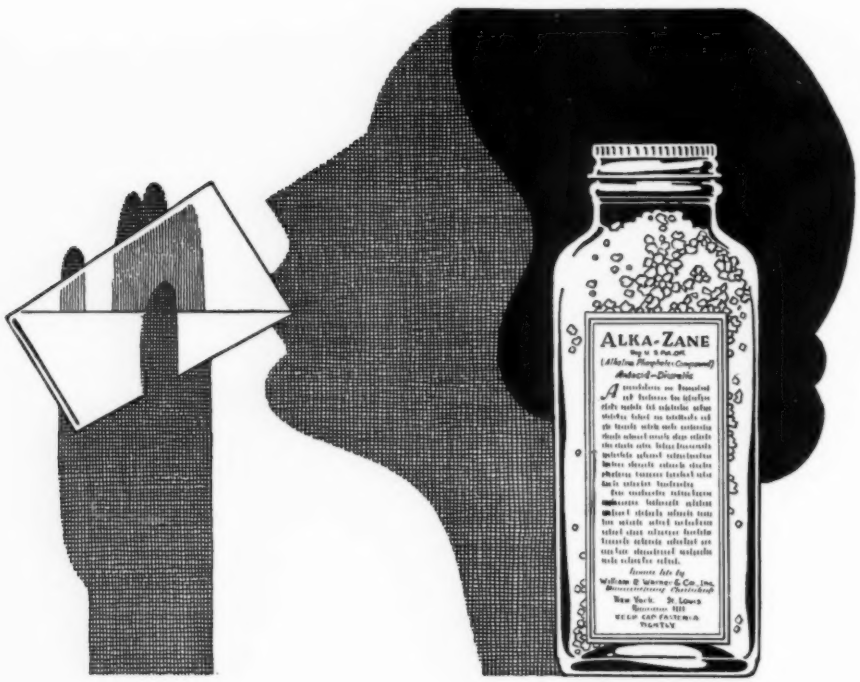

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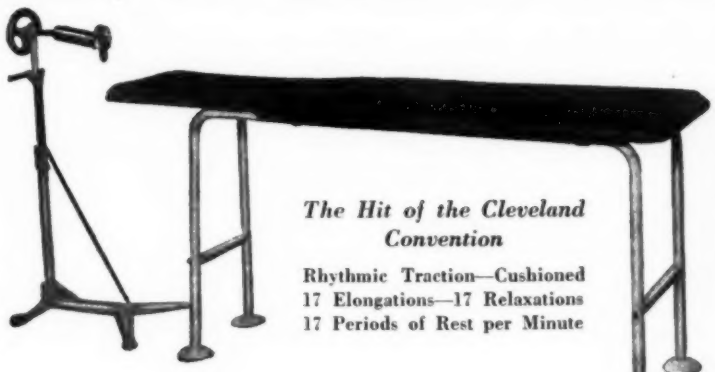

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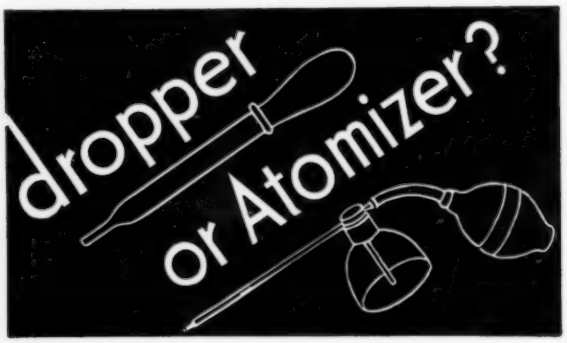

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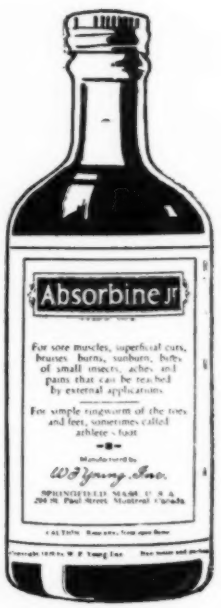

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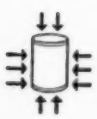
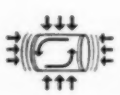


The Ordinary Way where food nearest the outside of the can gets too much heat and the inside gets too little.



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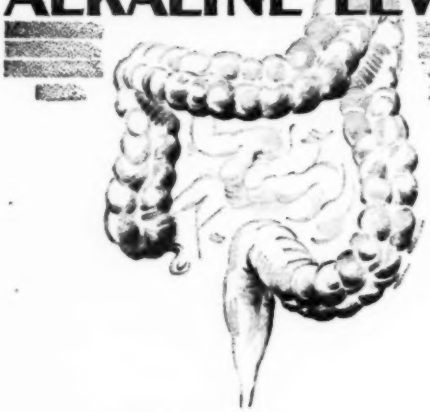

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CANNED FOODS AND THE PUBLIC HEALTH

II. Iron and Tin Salts

• The question is sometimes raised as to whether the metallic salts which canned foods may acquire from contact with tin containers are objectionable from the standpoint of public health. We are glad to present the facts in answer to this question.

The modern "sanitary style" can is manufactured from "tin plate". As the name implies, tin plate is made by plating or coating thin steel sheets with pure tin. This tin coating cannot be made absolutely continuous; under the microscope, minute areas can be noted in which the steel base is exposed.

Foods packed in plain or unenameled cans are, therefore, exposed to iron and tin surfaces. In enameled cans, foods are mainly in contact with inert lacquers baked onto the tin plate at high temperatures. However, because of minute abrasions in the enamel covering, unavoidably introduced during fabrication of the can, foods in enameled cans may also have limited contacts with iron and tin surfaces.

It is common knowledge that canned foods may acquire small amounts of these metals from contact with their containers. The acquisition of iron and tin salts in this manner is an electrochemical phenomenon (1); and the amounts of these metallic salts thus acquired will depend, among other factors, upon the character of the food. In general, the acid foods tend to take up more of these metals; especially when air is admitted after the can is opened. However, the quantities of tin or iron present in canned foods, as a result of reaction with the container, are small; the analytical chemist reports these amounts in "parts per million".

As far as iron is concerned, it is commonly accepted that the amounts of this element—recognized as essential in human nutrition—which may be present in canned foods, are innocuous.

As to the tin salts which may be present in canned foods, the Department of Agriculture has authorized the following statement as the result of its own investigation:

> "Our own experimental work, involving the ingestion of far larger amounts of tin than any previously reported, and supported by the experimental evidence of other investigators, leads us to the conclusion that tin, in the amounts ordinarily found in canned foods and in the quantity which would be ingested in the ordinary individual diet, is for all practical purposes, eliminated and is not productive of harmful effects to the consumer of canned foods." (2)

It may therefore be stated that the amounts of tin and iron salts normally present in commercially canned foods are without significance as far as possible hazard to consumer health is concerned.

AMERICAN CAN COMPANY

230 Park Avenue, New York City

(1) Kohman and Sanborn, Ind. Eng. Chem. 20, 76, 1373 (1928); ibid, 22, 615 (1930).

(2) "Food-Borne Infections and Intoxications", F.W.Tanner, Twin City Pub. Co., Champaign, Ill., 1935, p. 90.

This is the tenth in a series of monthly articles, which will summarize, for your convenience, the conclusions about canned foods which authorities in nutritional research have reached. We want to make this series valuable to you, and so we ask your help. Will you tell us on a post card addressed to the American Can Company, New York, N. Y., what phases of canned foods knowledge are of greatest interest to you? Your suggestions will determine the subject matter of future articles.

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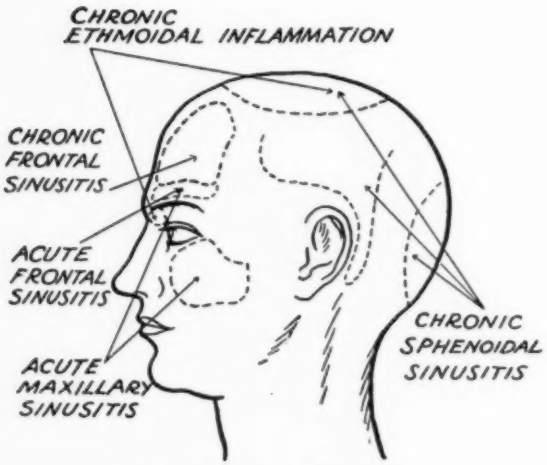

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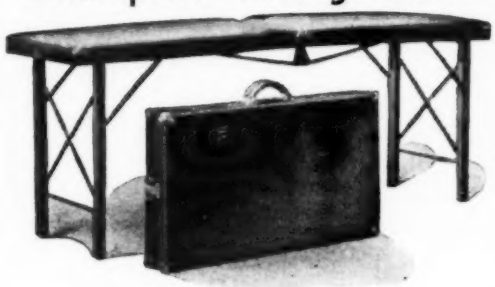

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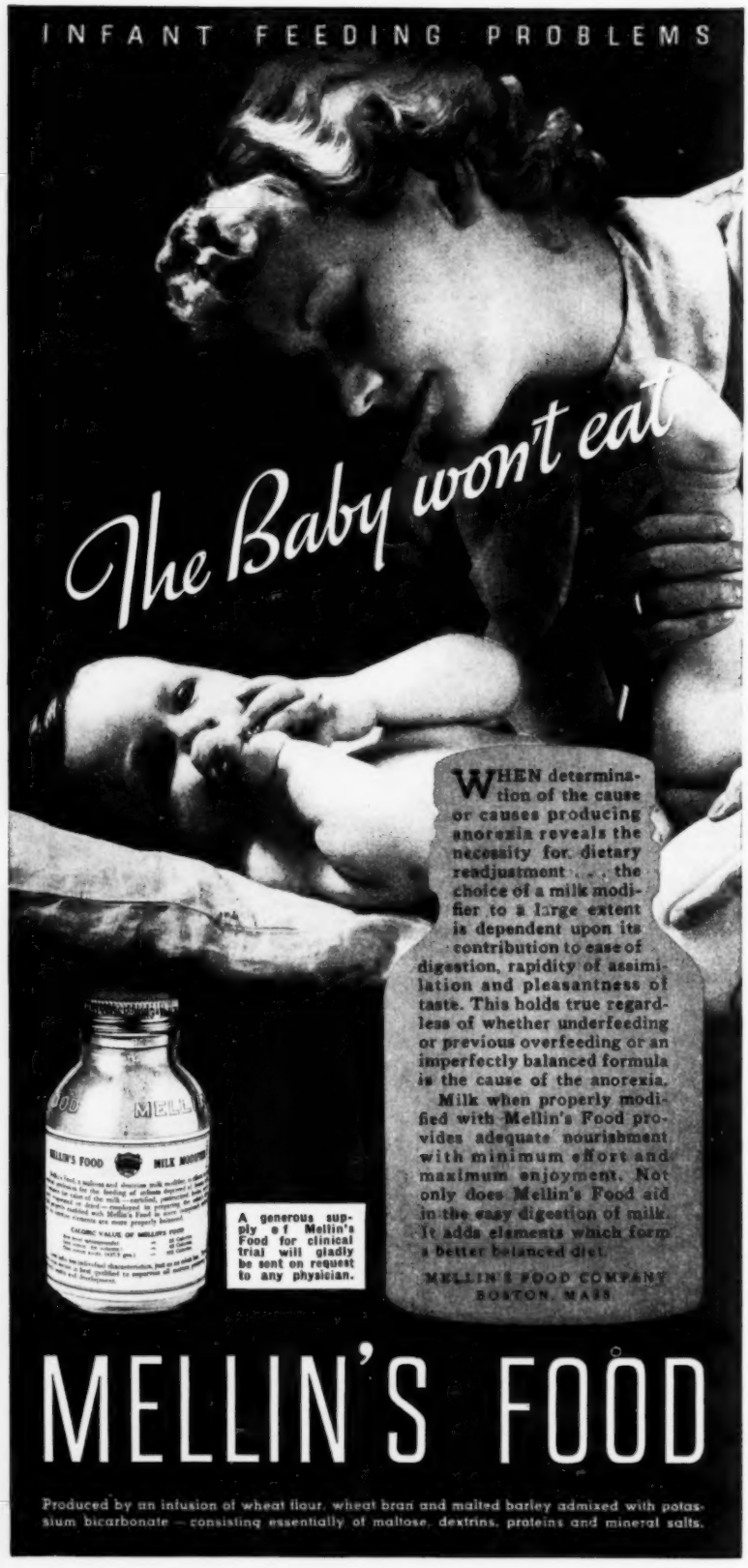
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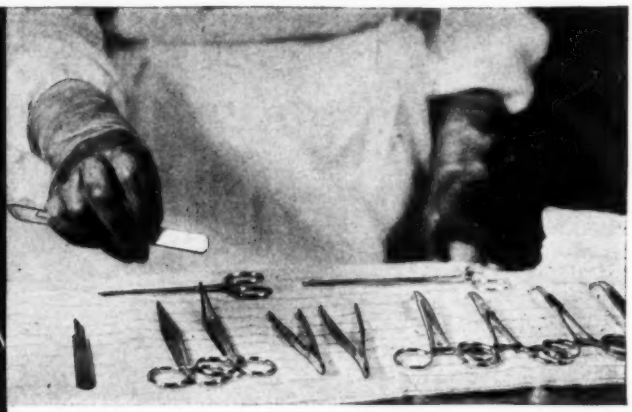

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The Journal of the American Osteopathic Association

PUBLISHED MONTHLY BY THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 35, No. 7 | 430 N. Michigan Ave., Chicago, Ill. | March, 1936

Osteopathy and Tuberculosis*

FRED E. JOHNSON, D.O.
Colorado Springs, Colo.

No race of people is exempt from tuberculosis. Ninety per cent of the population of the world is infected to a greater or lesser extent with the *Bacillus tuberculosis*. Fortunately, in only a small proportion is it sufficiently pronounced to be recognized clinically. Approximately one million people in this country are suffering from active tuberculosis, of whom nearly 100,000 die annually. Throughout the world a million deaths a year are recorded as its toll. That the mortality rate is decreasing throughout the civilized world is a note of encouragement.

In spite of the crusades that have been conducted for the purpose of stamping out tuberculosis, particularly during the past three decades, according to Beckman[1] "ninety per cent of those born within the past thirty years and now past childhood show evidence that they have been infected with the germ of tuberculosis. While all, with rare exception, are born free from the taint, it has been found that, despite the crusade, about 10 per cent of all infants are infected during the first year of life, about 50 per cent before they reach the age of six years, and at eighteen, over 90 per cent of all human beings show unmistakable proof that they harbor tubercle bacilli within their bodies." It is readily admitted that little is actually known about the factors that "cause the development of the disease in a relatively few of us although the vast majority of us are infected, and even less regarding the mode of the initial infection from which the disease springs." In summarizing, Beckman[1] says: "The pitifully few facts that we can marshal do not supply an answer that is at all satisfactory." Let us keep this statement in mind, for we shall approach it from another angle.

Much of inestimable value has been given us through the efforts of students of tuberculosis. Many forms of therapy have been advanced and discarded. Improved working and housing conditions have made great advances. Sanatoria through routine methods of utilizing rest, diet and sunshine have definitely proven their value. Patients have been taught to care for themselves and protect others.

Let us add to these things by applying to the subject of tuberculosis the osteopathic concept of pathology. Never was a broader statement made in the consideration of any pathology than Dr. Still's pronouncement, "The rule of the artery is supreme," and most certainly it fits perfectly into the study of the pathology of tuberculosis.

Louisa Burns[2] gives proof of these contentions. I shall quote freely in order to emphasize my point.

> The alveoli are lined with epithelial cells, flat, thin, and often without nuclei, resting upon a thin basement membrane. With relatively slight degrees of edema, these cells are pushed away from the basement membrane, and lie free, by ones, twos, or larger groups, within the alveolar cavity. They are sometimes found in great numbers in the sputum. They are associated with blood cells in the alveolar cavities and in the sputum in the hepatization of pneumonia. . . When these alveolar cells are found lying free in the alveoli in the lungs of animals, they indicate antemortem edema, and thus serve as a criterion which is useful in the study of the effects of bony lesions upon the lungs.
>
> Accessory lobes of the lung, reported in the progeny of lesioned animals at Sunny Slope, are often important in pathogenesis. . . Abnormal developmental structures, in the lungs as well as elsewhere in the body, are especially prone to infections as well as to malignant diseases. The fact that vertebral lesions in parents are one cause of developmental imperfections has been shown in the animal studies at Sunny Slope and in human studies made by many osteopathic physicians.

Anatomical changes may vary greatly in extent, from marked and obvious deviation from the normal, to minute or histological abnormalities. That these changes may affect the number of lobes in the lung or merely impair the stability of the alveolar cells, is largely a matter of degree. Here the rule of the artery has been challenged. Here lies what I believe to be a most important factor in the cause of tuberculosis. Here we may begin consideration of the problem of tuberculosis, not alone in the treatment of the incipient or advanced case, but also as a scientific fact in preventive medicine.

Regarding the vasomotor control of the lungs, Burns[2] concludes:

> Any conditions which affect the normal activities of the pulmonary vasomotor centers interfere with the value of their protective activities. These conditions include lesions of the third, fourth, and fifth thoracic vertebrae, lesions of the upper ribs, and probably lesions of the clavicles, the occiput, atlas and axis, and the first, second, and sixth thoracic vertebrae.

*Delivered before the General Sessions of the Thirty-Eighth A.O.A. Convention, Wichita, Kans., 1934.

The lesions mentioned may affect the lungs by way of the vagus and the pulmonary vasomotor nerves, any of which may be affected by the edema and other conditions associated with strains or other lesions. . . The lungs are protected from injury by means of many structural and functional safeguards. For this reason, one or even several causes of bronchial disorder may be present without causing any immediate symptoms. Only when pathogenic forces exceed the protective agencies, usually because the functional values of the protective mechanisms are themselves disturbed, do serious symptoms occur.

Why have the tubercle bacilli invaded 10 per cent of children before they are one year old? When was the rule of the artery first challenged? Was it when, in the first breath of life, the obstetrician failed to secure the response of a full-throated cry to expand all the alveoli of the lungs? May a localized atelectasis be a factor? Norris and Landis[3] say that in weakly children it is possible that portions of the lungs remain unexpanded during the first year of life. Is it such a child who is to be one of the 10 per cent? Let us look even a long step beyond this. We have learned something of the influences of the prenatal state of the mother. Burns' work has given us much to think of in this connection.

What has caused 50 per cent of the children to become infected before they have reached the age of six years? The above factors may enter during this period. In addition, we may reasonably presume that childhood injuries, colds, pneumonia, whooping cough, and the exanthematous diseases may have played their part. Focal infections may impair directly or indirectly the integrity of lung tissues. Is our dietary so deficient as to be a factor to this great extent? Milk, as an almost universal food for children, must be given thoughtful consideration. It undoubtedly has been the source of infection in a great number of cases.

Between the ages of six and eighteen an additional 40 per cent of children are doomed to infection. This period covers years of additional hazards—as climatic exposures, schoolroom contacts, postural and developmental abnormalities, an increase in focal infections, and a wide range of injuries. Some forms of high school athletics, notably basketball, probably enter as a causative factor. Of great importance, also, in this period is the development of the endocrine system. The relationship of tuberculosis and endocrine dysfunction is becoming more frequently recognized.

Let us consider briefly a group of adolescent children where a predominant complaint is unusually rapid growth, faulty posture, nervousness, irritability and the chain of symptoms so often present in these young people. By far the greatest number of these come for the first time to the osteopathic physician. Perhaps the family history with regard to respiratory diseases is an unfavorable one. The poor chest development attracts our attention. The respiration is shallow. Directed to take a deep breath, we find many of them make a poor job of it. The most exhaustive examination we are able to make fails to elicit any clinical manifestation of tuberculosis. Yet these patients offer a much greater than average likelihood of becoming tuberculous. Now we must think ahead, as we do daily in all our spinal findings—think ahead and avoid the tragedies that are almost certain to follow if we fail to heed the danger signals. This is the time to begin treatment—osteopathic manipulative and corrective postural regimes, dietary, and hygienic (perhaps a change of climate, or a few months rest from school). We must teach proper breathing. All foci of infection must be eradicated. Osteopathy here finds one of its greatest fields, that of prophylaxis. In one's community there may be a dozen men, or a hundred, who can do an outstanding service in the operating room, but there is not another person who can direct this highly specialized job as well as the osteopathic physician.

A physician of this school of practice can recall the observations made of spinal abnormalities in children from infancy through adolesence in all conditions for which he has been consulted—the infant feeding problems; the childhood diseases with their complications; colds, flu, pneumonia and their many sequelae; injuries with their complications; and the wide range of psychic problems of the adolescent boy and girl. He has noted that these children under osteopathic care had much less frequently the complications experienced by other children in the neighborhood not under osteopathic management. In many instances this comparison has been made by the parents themselves and they have told of their observations. This is not a coincidence. It is reasonable to assume that the child who has been under osteopathic care for illness or injury from infancy on, will not become a victim of tuberculosis in late adolescence or early adulthood. It is also reasonable to assume that the work of the osteopathic physician in prenatal care offers unique protection for the unborn child. During delivery and afterward, it offers additional safeguards for mother and child. Surely we may reasonably claim that osteopathy offers a service in preventive medicine second to none in definitely lessening the likelihood of tuberculosis throughout these years from birth to adulthood.

My home, Colorado Springs, is one of many communities in the West where many tuberculosis patients go to secure the additional benefit of dry climate and higher altitude. Opportunity has been given us to see tuberculosis in all its stages. We have seen many advanced cases that had never been correctly diagnosed. On rarer occasions, diagnosis of tuberculosis has been definitely disproved by careful examination. Observation over a period of years impels me to emphasize the plea that we, as osteopathic physicians, be alert, always alert, and guard jealously the reputation of our profession by never permitting any patient carrying the slightest suggestion of chest disease, or other manifestation of tuberculosis, to be sent away until, by careful and repeated examination over a period of days or if necessary, weeks, we have definitely proved the existence or absence of active infection. All the diagnostic methods of value should be resorted to when necessary. Among the most valuable of these are the osteopathically trained finger tips—and a greater diagnostic instrument has not been produced. Early diagnosis and early treatment is important. Only a thorough understanding of tuberculosis and its many manifestations will enable one to make the necessary study of these patients. "Nervous breakdown" is a meaningless term that has been given as a diagnosis many times for the period between beginning tuberculosis and the time that an advanced and often hopeless stage has been discovered.

Tuberculosis may be found at any age. Our problem is to find it early, in its incipiency. To wait to confirm the diagnosis, bacteriologically, may seriously impair or entirely ruin the chances of a patient for recovery. I have seen cases where the sputum has failed

to reveal a single positive finding in repeated studies over a period of two years, yet the clinical findings were sufficient to justify the diagnosis. Great courage is required in many instances to make the diagnosis and institute the proper regime for a patient hitherto entirely unsuspecting any serious illness. For many young people it is a crisis in their lives. Careers must be abandoned; dreams of college education must be postponed for one or more years; plans for marriage must be indefinitely delayed or abandoned. For many, a branch road must be taken and all plans for the future definitely altered. Few problems in life compare in magnitude with that brought by the realization of a young patient that he has tuberculosis. Few problems in the life of a physician will tax his resourcefulness as do these cases. His duty now is not only that of physician, but also of counsellor and friend, and these duties are increased through the trying months or years of convalescence or retrogression.

We have one great task before us, that of regaining health. All else must give way before this necessity, and nothing must be allowed to interfere with our carefully planned routine of regularity. Rest, fresh air, freedom from anxiety, and a most carefully regulated dietary are essential. Each case is distinctly an individual problem, and upon the mental attitude of the patient, and our ability to mould that attitude, will depend much of our success. Hopefulness and cheerfulness must be worked for. Above all, the patient must learn to take care of himself, and we must see that he has a proper understanding of protecting others against infection. Faulty conditions and habits of life, which frequently played a part in his physical breakdown, must be definitely and permanently abandoned.

Particular emphasis must be placed upon the pathology present in each individual case, and in all our manipulative work a visualization of the direct mechanical as well as the remote effect of our treatment must be kept before us. Perhaps no other condition calls for the exercise of more skill and judgment than the manipulative treatment of a tuberculous patient. Great care and gentleness is the rule. Methods of technic cannot be covered in a brief paper.† The exercise of the same judgment that should govern the treatment of any other pathology of equal seriousness will suffice to enable us to adapt our technic to each individual case. Of great importance is the general care, covered adequately in any good text, from which we may accept that which fits into our program. We shall some day add to all that has been written, osteopathy's contribution to the prevention and treatment of tuberculosis.

SUMMARY

It is admitted that little is known of the cause of tuberculosis or why one individual develops the disease and another does not. Explanation from an osteopathic viewpoint is based on Dr. Still's "rule of the artery."

Osteopathic research has proved the effect of lesion pathology on diseases of the lungs. For this reason osteopathy has much to offer in the prevention and treatment of tuberculosis.

Treatment calls for resourcefulness and the exercise of mature judgment in the use of manipulative therapy.

†The paper by W. B. Gould, D.O., which immediately follows answers many of the questions that arise in the osteopathic care of tuberculosis, particularly in regard to the type of manipulative therapy to be used.—EDITOR.

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Osteopathic Care of Tuberculosis

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The ready response of tuberculosis to the natural methods of treatment, such as fresh air, sunshine, and proper nutrition, in contrast to its persistent lack of response, throughout the ages, to the so-called specific cures, shows how unquestionably it comes within the field of osteopathy.

Tuberculosis is a responsibility of osteopathy, and the failure to accept this responsibility makes it none the less so. In the past there seems to have been a reluctance on the part of the profession, generally, to become more than mildly interested. Of late, however, for some reason, interest in tuberculosis is on the increase and inquiring minds are seeking information on the subject.

In order that the profession may be better able to sense its own pulse beat on the matter, a few of the many questions received and answered are here presented. In some instances an inquiry has been fashioned into two or more questions in order the better to classify each; on the other hand, in order more effectively to transmit the continuity of thought in both question and answer, many have been left intact.

Query.—How much greater do you consider the chances of developing pulmonary tuberculosis later in life in the individual who has had an active tuberculous lesion during childhood, than in the individual who has not experienced childhood tuberculosis?

Answer.—In short, I understand this question to ask what influence extrapulmonary tuberculosis during childhood has upon the development of the pulmonary condition later in life. I would say that no such influence exists unless it be possibly in the negative. It is a relatively rare occurrence to find phthisical patients with evidence (scars, ankylosis, etc.) of earlier gland, bone, and joint tuberculosis, while frequently we see its evidence in individuals who, except perhaps for some slight degree of disability, are living normal lives and enjoying good health. Because this fact has been so generally noted, many are inclined to believe that an early extrapulmonary tuberculous lesion exerts some immunizing effect which prevents the development of the pulmonary condition later in life. Particularly is this true where the early lesion involved the tracheobronchial glands. Fishberg[1] says: "There seems to be a distinct antagonism between tuberculosis of the lungs and that of other organs."

Query.—I have a patient 67 years of age with tuberculosis whom I am attempting to treat. I say attempting, for the reason that I feel I am not getting the results I should because of the trouble the rest of the household is giving me. For years the patient has had a chronic cough which was considered bronchitis.

A daughter, her husband, and their two grown children live in the patient's home. In fact the grandchildren were born and reared in the home. The daughter and grandchildren are afraid of contracting the disease. Tuberculin tests, taken of them without my knowledge, were positive. Since then they have put the patient off in another part of the house and will not have him near them or allow him to eat at the table with the rest of the family. He is made to feel that he is a social hindrance as well, in that they say that their friends are reluctant about associating with him or them. The grandson is 22 years of age. He is a college graduate and has a good position in a bank. The granddaughter is 19 years of age and a senior in college. The old gentleman has always taken great pride in them and has financed their schooling. Their attitude makes him very unhappy. He is failing, but I feel sure it is because of this state of affairs rather than because of his tuberculosis. I do not make a practice of treating tuberculosis, and this case has exhausted all my material for reasoning and argument against the possibility of the daughter and grandchildren catching the disease. Can you give me any information that will be in the nature of convincing proof?

Answer.—There is plenty of proof which should be convincing to anyone who will resort to sound reasoning. These individuals have far less cause to fear infection now than they had years ago. Infection with the *Bacillus tuberculosis*, in the civilized races, almost invariably occurs during childhood. The time for the grandchildren to have been fearful was during the early years of their life when they were probably far more closely associated with the grandfather and his chronic cough. The positive tuberculin test shows that they have been infected, but that does not necessarily mean that they have, or will develop, active tuberculosis. It is only through infection that immunity to the disease is built up. When uninfected adults come in contact with tuberculosis for the first time, they usually develop the acute and fatal form of the disease because they have previously had no opportunity to establish an immunity against it. These individuals, therefore, can indeed be thankful that their tuberculin test came back positive. The dangers of infection from one adult to another is practically nil; and such instances as this would be fewer indeed if those engaged in the campaign against tuberculosis would spend less effort teaching that the consumptive is a source of danger to other adults, and be more concerned about protecting the children—the ones who are in actual danger of becoming infected and who need protection.

Two of the best arguments one could wish for in your case are: It has been definitely shown that doctors, nurses, and attendants who care for tuberculous patients do not develop the disease more often than those who are not in direct contact with it; and, despite the fact that droplet infection is known to be one means by which the dissemination of tuberculosis takes place, there is no attempt made by sanatoria to separate the open and closed cases or definitely to prevent those not having the disease from associating with those who have.

Bruns[2] goes so far as to say: "Tuberculous infection is beneficial for the majority of people." And Bushnell[3] says: "The consumptive, much to be dreaded as he is at close quarters for the uninfected, is indispensable in the present era, because he unwittingly provides for that immunization which prevents our race from perishing as so many other races have perished when thrust unprepared into the midst of infection."

In the home of your patient the ordinary hygienic procedures should, of course, be observed, such as the use of sputum cups and the burning of sputum, care in the protection of others, particularly infants and children, when coughing, sneezing, and even talking at close quarters, etc. Beyond this, the concern of the rest of the family lies in keeping their resistance up to par.

Query.—Is there usually as pronounced a difference in the pathology of an acute and a chronic case of phthisis as there is in the clinical manifestations?

Answer.—Unless other causes can be found for the clinical picture presented, it is usually considered a good index to the character and, to a lesser degree, the extent of the pathology present.

Acute tuberculosis is an exudative tuberculosis. It is the result of either an absence of, or a break in, immunity, and is characterized by an exudate largely albuminous in character and more or less within the alveoli. Mixed with the exudate are to be found cells in varying numbers and of different origin. Around the alveoli the lung tissue is infiltrated. The whole goes on to a rapid caseation and destruction of the lung tissue. The usual roentgenogram shows opaque shadows with washed out or blurred margins and of wide extent; the lesions usually spread from the central part of the lung, becoming fused into normal lung tistue; cavities, when present, show ragged margins. It usually runs a rapid and fatal course with no attempt toward fibrous tissue formation. The picture here presented would of course vary somewhat when an acute is superimposed upon an old chronic tuberculosis.

The chronic is the usual type of pulmonary tuberculosis. It is termed nodose tuberculosis, and, depending largely upon the degree of immunity maintained, the case either retrogresses into the more acute form or progresses into the fibrous form. It, representing the productive type of inflammation, is characterized by the formation of a cell rich granulation tissue. Caseation and tissue destruction occur here also to some extent, but the advance of the disease is hemmed in by connective tissue encapsulation hyaline changes, and fibrous tissue formation, giving the picture of induration. Here the x-ray shows lesions of moderate density, irregular or clover-leaf in shape, with fairly well-defined margins, giving the plate a discrete or diffuse mottled appearance—diffuse or confluent above, discrete or scattered below.

While the clinical manifestations of acute tuberculosis are severe, those of chronic tuberculosis are moderate in severity. In the acute form the fever is high and of a hectic type; the pulse is rapid; there are usually night sweats and chills; the patient may be well nourished because, as a rule, he dies of toxemia before there has been sufficient time for much loss in weight, and the sputum will contain elastic tissue and many tubercle bacilli. In the chronic form there may be no increase in temperature, but usually it is found slightly elevated with a correspondingly quickened pulse rate. There is usually fatigue and weakness on exertion, a gradual loss in weight which may go to the extent of emaciation, and a moderate cough and ex-

pectoration, and the sputum usually contains the tubercle bacilli and elastic tissue.

Query.—In making a diagnosis of tuberculosis of the lungs, what particular findings are to be looked for?

Answer.—The diagnostic points of major importance, which when combined represent the objective toward which we work in making a diagnosis, are five in number, namely: (1) positive sputum; (2) medium rales above the second rib and third dorsal spine; (3) parenchymal lesions over the same area, as demonstrated by the x-ray; (4) hemoptysis; (5) pleurisy with effusion. To the osteopathic physician there is a sixth point—influencing osteopathic lesions. It is not always necessary, of course, to find all these diagnostic points present in order to make a diagnosis, and their presence does not always tell us whether or not the case is active. An exudative inflammation (either around old productive foci or when the exudative inflammation exists alone), elastic tissue in the sputum, and the presence of constitutional symptoms will decide this for us.

Query.—Has tuberculin any diagnostic value?

Answer.—Had your question asked if tuberculin has any clinical diagnostic value, it could have been answered in comparatively few words. Our chief diagnostic concern is not only to determine the presence of disease but also its activity. The cutaneous tuberculin test is of no clinical diagnostic value except in early childhood when a positive reaction is thought to indicate active tuberculosis. In later childhood and in the adult, tuberculin diagnoses the presence of tuberculous infection only. It is an allergic reaction as is shown by the fact that it is often negative in the terminal stages of chronic pulmonary tuberculosis, and in rapidly progressive phthisis, tuberculous meningitis, etc., as well as in the acute infectious diseases as diphtheria, influenza, scarlet fever, measles, etc. And in the newborn infant, before the tubercle bacilli have entered the body, there is never any reaction, even to large doses.

Inasmuch as it does not diagnose the activity of a case of tuberculosis, except perhaps in early childhood, or tell us whether or not the disease is even present, its clinical unreliability is plainly evident; and this is especially emphasized when we consider further that well over 90 per cent of the human family are infected in late adolescence and will give a positive reaction, while manifest tuberculosis presents itself in only between 3 per cent and 4 per cent. This allergic reaction in tuberculosis is not specific for tuberculin alone as the same results may be obtained by using substances other than tuberculin, such as, the toxins of cholera, dysentery, typhoid, etc., and even though the individual tested had never suffered from the respective disease.

The cutaneous tuberculin test was the simplest and probably the most reliable of any of the tests until the Mantoux test was devised. This is a modification of the former and is held to be of greater value in infants where it is thought to be more certain in diagnosing active cases of tuberculosis. It is an intracutaneous test and, like the former, it is of little value in the adult. The subcutaneous test not only has been shown to be of as little value as the former two, but also it carries with it dangers which are not encountered by their use, such as reactivation of latent or quiescent lesions and possibly provocation of hemoptysis, etc. As our usual concern is to determine the presence or absence of disease, and particularly whether or not it be active, and as tuberculin merely tells us whether or not infection is present, we are forced to admit that it has little or no clinical value.

Query.—A patient recently examined is a woman 34 years of age. She is a school teacher and complains of a productive cough, which in the last two months has become particularly annoying during her hours in the school room. She also complains of shortness of breath, particularly on exertion, and general malaise. Her weight has increased slightly during this time even though she says she never feels rested and has been following a strict diet. There is a slight daily elevation of temperature. The sputum is negative for tubercle bacilli. Both x-ray and physical findings are out of proportion to the symptoms. The x-ray shows lesions present in both lungs, particularly pronounced in the left. The apices light up under fluoroscopy. Over the lesioned area the physical examination reveals dullness on percussion, increase in breath and voice sounds, and a variety of rales. How do you account for the disproportion between the physical and x-ray findings and the clinical picture, also for the increase in weight?

Answer.—I am unable to get from your description a very comprehensive picture of the character and distribution of the pathology present. You make no mention as to whether the lesions by skiagraph show perifocal reaction or whether they are those of healed lesions with well-defined margins.

The symptoms present would lead one, of course, to think of tuberculosis. However, in tuberculosis the apices usually show the greatest involvement, and, as a rule, do not light up well under fluoroscopy. Bearing in mind the extent of pathology and the presence of activity, as is evidenced by the presence of fever, one would expect the fever and other constitutional symptoms to be more pronounced. Because of the location of the lung pathology, we must consider two other conditions—pneumoconiosis and pulmonary syphilis. In the former there is a uniformity in the distribution of the lesions bilaterally and an absence of any tendency toward caseation and cavity formation, as is the tendency in tuberculosis. Even though differentiation from tuberculosis otherwise is not always easy, yet here the sex of the patient tends toward ruling out this condition. In the latter the lesions likewise closely resemble those of tuberculosis, but are confined usually to the lower lung fields. The usual symptoms of phthisis including fever, loss of weight, and even hemoptysis, may be present in pulmonary syphilis. These are usually milder than in tuberculosis and the course of the disease is comparatively slow.. In this the disproportion between the physical and x-ray findings and the clinical picture might be explained. When the two diseases occur together, the chronicity of the tuberculosis and the mildness of the symptoms speak of a superimposed early tuberculosis upon a late syphilis. The slight fever would lead one to suspect some degree of tuberculosis. The cough and expectoration might be accounted for by the probably existent bronchitis. However, repeated (not less than eight consecutive) sputum analyses should be run to determine definitely,

if possible, the presence of absence of phthisis. My advice would be to do a Wassermann (it may be necessary to remove some of the spinal fluid for this purpose) and to check thoroughly for other manifestations of syphilis. Her history may yield valuable information, but the cautious administration of specific medication and repeated Wassermann tests will determine usually the final diagnosis.

When pulmonary tuberculosis and tertiary syphilis are associated, the tuberculosis tends toward the more chronic fibrous form, due probably to the tendency toward fibrosis in syphilis, and under specific medication the lesions of syphilis and the symptoms of both diseases readily disappear. But antisyphilitic medication should be administered cautiously and a close watch kept of its effect upon the lung lesions because, while it will clear up the lesions of syphilis, it will, if too long continued, break down those of tuberculosis. This seems particularly true of mercury and the iodides, while it is less so of bismuth. It might be interesting to note that when late syphilis and early tuberculosis are associated, an increase rather than a decrease in weight is the rule.

Query.—Why are not the terms, "crepitant" and "subcrepitant" used in describing the rales of tuberculosis as well as those of pneumonia?

Answer.—They may be just as correctly used in tuberculosis, but those desiring to diagnose a rale anatomically as well as pathologically prefer to use the term, "parenchymal" when referring to the crepitant rale, principally to show that it originates in the parenchyma of the lung; whereas when resolution has taken place and the subcrepitant rale appears, to place it anatomically, it is referred to as a bronchial rale and qualified as being moist or dry (the moist being further designated as the bubbling rale, either fine, medium or coarse; the dry as the musical rale or rhonchus).

Query.—I have a consumptive patient whose condition is of long standing. Recently he has developed an abdominal condition that is proving rather disquieting and which does not yield readily to treatment. He is very constipated. His appetite is poor and what he does eat does not agree with him. He has considerable pain throughout the abdomen and his stool carries the tubercle bacilli. In your opinion, could this be intestinal tuberculosis and what would you advise doing?

Answer.—Tuberculosis of the intestines is a complication that is not always easy to diagnose as some cases with extensive intestinal involvement may show no signs of it, while other cases with little or no involvement show pronounced symptoms. Some degree of gastrointestinal disturbance, however, is present in most cases of phthisis. While we expect to find tubercle bacilli in the stools of patients having intestinal tuberculosis, their presence does not necessarily diagnose the condition as it may be due to the swallowing of positive sputum from an active lung lesion or even from an old cavity or bronchiectasis in a closed case.

Before making a positive diagnosis of the condition, in addition to the above mentioned symptoms and the finding of tubercle bacilli in the stools, the abdomen should be palpated for tenderness and rigidity in the right iliac fossa and for the presence of a cecal tumor. A careful x-ray examination should be made. A gradual and persistent unaccountable loss of weight, an increase in temperature that cannot be accounted for by the lung lesions, and flatulency often serve as guides.

The treatment is often trying and disappointing; however, excellent results are obtained in some cases. It consists largely of a regulation of diet. Cereals, boiled milk, and carbohydrates are usually well borne, but fruits and vegetables should be limited. If the lung lesions are such that its use is not contraindicated, excellent results may be expected from the use of heliotherapy. The daily high enema is often of value and some make great claims for calcium chloride given intravenously once or twice a week in doses of 5 to 10 cc. of a 5 per cent solution at first, later a 10 per cent solution. It is to be understood that this is treatment in general and that for the best results individualization of treatment is necessary.

Query.—What is the prognosis in pulmonary tuberculosis in general?

Answer.—We must look upon prognosis as a constantly changing entity. It is as individual as is the case, and in practice should of course never be considered otherwise. Statistics, therefore, do little for us. It is never wise to render a prognosis until after a period of observation.

Fishberg,[1] on the prognosis in the various forms of the disease, expresses himself as follows: "Patients with acute phthisis usually last as many weeks or months as those with chronic phthisis last years."—which tells us little. Bruns[2] says that it has been shown that from 90 to 95 per cent of all persons who have had clinically recognizable pulmonary tuberculosis will die of the disease, or a complication of it, sooner or later, and that it is estimated that after the young adult develops chronic pulmonary tuberculosis the average duration of life is from two to four years. One can, however, appreciate both extremes of this when we see patients with comparatively slight involvement rapidly retrogress and die while others with extensive involvement and in the far-advanced stages of the disease heal their lesions and, by living according to the dictates of their condition, live to a ripe old age.

Query.—How does the prognosis in a case of slight involvement compare with that in a case of extensive involvement?

Answer.—Other things being equal, the prognosis in the case of slight involvement would of course be the more favorable, but they do not often favor us by being of that nature. There are many factors entering into a prognosis which may influence it favorably or otherwise. They include extent and character of lung involvement, race, age, character, sex, occupation, financial condition, environment, resistance, symptoms (particularly the constitutional), presence or absence of complications (tuberculous and nontuberculous), and method of treatment. Because of the various and numerous influencing factors, it is impossible, at first, to make a prognosis in any given case, and it will readily be seen that their influence may be such as to render the prognosis in the far-advanced case even more favorable than that of the case with slight involvement.

Taking the make-up of the patient and his adaptability to treatment, as an example, I have seen many instances where patients with comparatively

little involvement and with excellent chances for recovery gradually or rapidly retrogress and die simply because of their unwillingness properly to carry out the essentials of treatment. Why this is so, it is difficult to understand, but these patients cannot—more often will not—adjust themselves to the necessary life of restriction and, against their own better judgment, continually disregard treatment. On the other hand, I have seen just as many instances where patients with a far greater degree of involvement and with far less chance of recovery gradually improve to the point of arresting their disease and living extremely useful lives simply because they exhibited sufficient will power to adjust their lives to accommodate their state of health. They were not only willing faithfully to chase the cure while their disease was in the active stage, but also when the maximum amount of improvement had been reached they would, even though it greatly limited their activities, so adjust their lives as to meet the demands of their individual cases.

Complications, both tuberculous and nontuberculous, may occur with either a slight or an extensive involvement, and impair, to a lesser or greater extent, the patient's chances. While it is difficult to tell the exact amount of influence a complication will have upon any particular case, it is equally as difficult to foretell its development. Therefore, the intelligent determination of a prognosis requires individualizing each case during a period of observation.

This is considering only two of the many influencing factors, and these only in a general way, but I think it will answer the question.

Query.—I thoroughly agree with your treatment of tuberculosis as set forth in your recent book.* Does not osteopathy hold the same place in tuberculosis as is *claimed* for it in pneumonia?

Answer.—The use of the word, *claimed*, plainly shows the origin of the question. Either through ignorance of the fundamentals of osteopathy or a wilful desire to misinterpret, the "osteopathic treatment" (that part of osteopathy which deals specifically with manipulative and corrective measures) is too often, as here, misconstrued to mean the complete science of osteopathy. The osteopathic manipulative treatment is a very potent remedy, not only requiring skill in its administration, but likewise requiring knowledge on the part of the physician in determining when it is not, as well as when it is, indicated; and there is no more reason to assume that the same osteopathic procedures are indicated in all cases, than there is to assume that the same drug medication is indicated in all cases. There seemed no necessity for specifically claiming the treatment of pulmonary tuberculosis to be osteopathic. By the alert and impartial mind that is taken for granted, inasmuch as osteopathy is more harmoniously in line with Nature's methods of healing and the treatment of the disease is largely up to Nature.

As far as the treatment of pulmonary tuberculosis and of pneumonia is concerned, when the difference in the pathology and course of the two diseases is taken into consideration, there should be no comparison. In pneumonia, the osteopathic physician strives to break up and remove the congestion both by stimulating expectoration and by stimulating absorption by the blood stream. In tuberculosis, the formation of tubercles on the walls of the bronchial tree, which invite the dangers of rupturing through when extra strain is thrown upon the lung, as is done by increasing its mobility, renders this unwise. In pneumonia, there is no tubercle formation nor is there the tendency for the microorganisms to lie dormant within the body for indefinite periods of time as is true in tuberculosis.

Knowing the pathology, no osteopathic physician would think of administering drastic corrective measures over an active tuberculous chest any more than he would continue to administer a stimulant to an already overstimulated heart. In the heart case he should, depending upon existing conditions, be content to tone up the heart, osteopathically or otherwise, and work with, rather than against, Nature. Likewise, in tuberculosis, he should be content to work with Nature rather than against her by maintaining as nearly as possible immobility of the diseased lung.

After all, although we are often loath to admit it, Nature is the true physician in any case, our part being merely that of a subordinate or assistant; and in this capacity the osteopathic physician is especially competent as by physical and physiological means he unblocks, so to speak, the channels through which Nature works, thereby enabling her more readily and completely to establish a cure.

Query.—As a rule I do not handle tuberculosis, but a patient of mine, who has recently developed the disease, believes he is not doing well. I have had him on the "rest cure" about six weeks, and he still runs an afternoon temperature ranging from 99.6 to 100.5 F. His cough and expectoration are quite pronounced. He is so highly ambitious that it is with considerable difficulty that he can be convinced of the necessity for rest. I would like to advise a change of climate, but his finances will not permit. He has an opportunity to go to New Mexico and do light part-time work on a ranch to meet expenses. What would you advise?

Answer.—There is nothing to tell me whether this patient is 16 or 60 years of age. I do not know the extent of involvement or whether or not he has shown any improvement during the time he has been under treatment. I shall assume, however, that he is a young adult and that the diagnosis is positively tuberculosis. His increase in temperature speaks of activity, and the productive cough, particularly in the presence of fever, is suspicious of some degree of tissue destruction.

Even with the most faithful "chasing," six weeks is too short a time in which to expect results. The time element in the treatment of phthisis is a most important factor and should, under the most favorable conditions, be looked upon, and thought of, in terms of years, rarely of months, and never of days or weeks.

Ambition is characteristic of tuberculous individuals. Wherever tuberculosis is found, almost invariably the individual will prove to be overambitious; and, in the treatment of the disease, ambition, although ordinarily a commendable trait, many times is the obstacle which proves to be most difficult to overcome, as is plainly evident in this case.

The question of changing climate is an old one and one that can best be settled by the physician and his patient, as it is they who know best the exist-

*An Abridgement of Pulmonary Tuberculosis. By W. B. Gould, D.O. Published by the author. Reviewed in The Jour. Am. Osteo. Assn., 1935 (July), 34:548.

ing conditions and circumstances. In deciding this, there are various things to take into consideration, however. First, has the home climate been given a fair trial and has the maximum available benefit been derived? Secondly, in choosing a climate we should not be content to ask ourselves whether or not a certain climate will meet the requirements of the patient's physical condition. His financial condition must likewise be seriously considered. No patient should be advised to make a change, who, by doing so, will be too greatly embarrassed financially; to whom the journey will be too fatiguing; or who, by so doing, will be compelled to endure hardships and inferior living conditions. In other words, it would be far better for him to remain in a less favorable climate where he could have the advantages of proper rest, fresh air, nourishing food, proper supervision, and freedom from worry than to go to the best known climate and sacrifice these measures.

The advisability of part-time work is another question that must be decided in many cases. It is never advisable while the case is active. It is permissible later only under careful and competent supervision. There is something appealing to most tuberculous individuals about the Southwest, particularly when the word "ranch" accompanies it. They are usually ambitious and many are lovers of the out-of-doors and it appeals to them as being a means of living the active life they are so desirous of being able to live. Your patient may be one of the many who believe that the sure cure for tuberculosis lies in that old imaginary formula of "roughing it in the west," while the fact of the matter is that those who improve under such conditions either do not have active disease in the beginning or do so in spite of, rather than because of, the "roughing it."

If results are to be obtained, your patient must be made to understand that the length of time required for healing is at best only problematical and that it depends largely upon himself. It should be made clear to him that it is "chasing" the cure rather than "chasing" climate that is of value in treatment; that he, in all probability, can heal his lesions in his own climate by proper "chasing"; and, above all, there is need of insistence that he carry out in detail the essentials of treatment.

Query.—When is osteopathy indicated in tuberculosis of the lungs? Unavoidably, I have a tuberculous patient who has a sacral lesion and also a lesion of the fifth thoracic vertebra. I am able to correct these lesions, but they recur. They are so persistent and their repeated correction appears to be so hard on the patient that I am wondering as to the wisdom of continuing this treatment.

Answer.—The whole treatment of tuberculosis is osteopathic. Why? Because the principles of the science of osteopathy are primarily the principles of Nature, and the results attributed to osteopathy come through its acceptance of these principles. And there is no place where the principles of treatment are more fundamentally those of Nature than in tuberculosis.

The prescribing of rest and open-air life and the regulating of the diet and exercise are all a part of osteopathic treatment. Likewise, and to no less a degree, psychotherapy, climatotherapy, heliotherapy, physiotherapy, and surgical therapy are osteopathic. In fact there is no part of its treatment that does not belong to osteopathy and this is so evident that it needs no affirmation. One of the fundamental principles of Nature is to place, as nearly as possible, diseased tissue at rest or at least to limit motion in the affected part. The usual means by which this is done is through contraction of surrounding soft tissue and by the setting up of pain impulses upon motion to restrict activity of the patient. In an acute appendix, for instance, a contraction of the abdominal muscles and the presence of pain and tenderness together with a change of body posture is Nature's way of protecting the part; and here she often goes so far as to inhibit peristalsis. If the case warrants, a natural surgical procedure is instituted, with Nature as the surgeon and the part, so to speak, removed through the walling-off process. Good osteopathy would frown just as decidedly upon instituting procedures here that would interfere with Nature's plans as it would upon producing motion between the ends of a broken bone. On the other hand, it would accede to her wishes and surgically remove the part. The lung is different only in this respect: Nature seems to have favored us purposely by making the lung less sensitive, which is a blessing in phthisis considering the duration of the disease; but sometimes I have wondered whether if the diseased lung were more painful, the necessity of limiting motion in its treatment would not be impressed upon us more forcibly. However, we can see that it is her intention to limit motion here also, by the severity with which other more sensitive parts are involved when her laws are disregarded too repeatedly. Examples of this are: The contraction of the intercostal and other muscles of the thoracic cage, even to the changing of body posture, and the formation of fluid in the pleural cavity, due to irritation of the pleura, both of which tend mechanically to limit motion. The involvement of the pleura is probably Nature's most effective way of enforcing limited motion of the lung in that it, due to pain, restricts respiratory motion. Thus it may be seen that motion is limited both by reflex and mechanical means. In view of these facts, it is obvious that good osteopathy is as applicable and imperative here as in the case of the acute appendix or of the fractured bone. *Restricting* motion of the lung in phthisis and *restoring* motion in the ordinary lesioned region of the spine, for instance, are both Nature's way of normalizing the abnormal and both belong equally to osteopathy.

The above may, at least in part, answer the question in your mind as to the wisdom of continuing the procedure of correcting the lesions which you mentioned.

Just a word regarding these lesions: I presume that you are working on the theory that the sacroiliac lesion is the primary lesion and that the thoracic lesion is secondary to it, which may be the case; but there is no apparent reason, that can be attributed to the tuberculosis, why they should repeatedly recur. And, if you are getting the primary lesion, I see no reason otherwise why they should prove so obstinate. Sometimes, in concentrating our attention upon the spine, we overlook the primary lesion which may be in the foot or knee and to which the pelvic and spinal lesions are secondary. In answer to your objection, which is a good one, to doing too much corrective work over the phthisical chest, let me suggest that when you find your primary lesion, which I feel reasonably sure you will, you put the body otherwise in proper align-

ment (by correcting the primary and sacroiliac lesions) and leave the thoracic lesion alone. In a few hours it may normalize itself. This frequently occurs and should, in this particular case, as the lesion has responded to previous attempts at correction. Our chief concern, when corrective work over the tuberculous chest is necessary, is to limit mobility of the lung to the minimum, thereby following the dictates of Nature.

Query.—Patients with tuberculosis, as well as those with other diseases, have osteopathic lesions. How can these be handled satisfactorily, particularly when they occur in the thoracic region?

Answer.—The thoracic region in most cases of pulmonary tuberculosis will be found in lesion. This may be either a bony or a soft tissue lesion or both, and may be either acute or chronic.

The acute condition may involve one or more vertebrae and usually can be considered as a secondary lesion. When the body is found to be out of proper alignment, we expect to find more than one lesion present. In clinical significance one, of necessity, must be considered primary; the remainder or secondary lesions Nature will have placed at the most strategic points along the spine in an effort to compensate for the effects of the primary lesion. The important question for us to decide is whether the thoracic lesion is the primary lesion or whether we are being misled into believing it to be because of its possible acute nature. Whether it be primary or secondary, it is a thing that, from the standpoint of correction, is not to be desired, particularly when the lung condition is active. It has been my experience that these acute thoracic lesions, particularly when not primary, are not especially obstinate to handle and do not require drastic corrective measures, which, if used in the majority of cases, would defeat their own purpose by possible harmful influence upon the diseased lung. Too many times, while our attention is being concentrated upon the spine, we do not see the lesion of the foot, or of the knee, or of the pelvis, to which that spinal lesion, which just will not stay corrected, may be secondary. We are often too prone to limit the osteopathic lesion to the spine and thoracic cage when considering body alignment. With the primary osteopathic lesion in the foot, for instance, throwing the body off balance, we find secondary lesions in the spine which Nature has put there to compensate for the disturbance of body balance provoked by the foot lesion. The same holds true when the primary lesion is in the knees or in the pelvis.

In solving the problem of these thoracic lesions in tuberculosis, my results have been the fruit of conservative experimentation. It has been my experience that when attention has been given the other lesions, thus putting the body otherwise in proper alignment, the thoracic lesion, as far as clinical significance is concerned, many times will disappear entirely within a few hours. Particularly is this true if the patient is up and about, when the spine is compelled to assume the weight of the body. This is not a new idea. All of us have had occasion to question our own diagnostic ability when, after diagnosing our osteopathic lesions and having corrected our primary one, we returned to the secondary lesion, which we felt positive was there only a short time before, only to find that it had partially or wholly disappeared, due, no doubt, to the influence brought about by correction of the primary lesion and probably favorably influenced by the patient having changed position while on the table.

If the above procedure is not successful in correcting the thoracic lesion, after first attending to the other lesions as before, the patient may be placed prone upon the table. The operator will place his hands one on either side of the lesion (over the second vertebra above and below) and exert sufficient pressure slightly to spring the spine. This will often allow the lesion to return to normal without the use of force.

Another very successful method, providing the lesion is not too high, is to use slight extension. This can perhaps be done more safely by the following method: The operator, sitting behind and to the right of the patient, who is also seated on a stool, reaches across the patient's chest and places his right hand in the left axilla of the patient. The left hand is placed on the spine over the second or third vertebra above the lesion. The patient is then slowly eased backward until the left elbow of the operator rests upon his left knee. This establishes a fixation point above the lesion, and with the weight of the patient's body together with an outward pull on the part of the operator's left knee, there is exerted sufficient controlled extension to enable the lesioned vertebra to return to its normal position without force being applied.

These are only two of the various procedures the object of which is to take care of the thoracic lesions without increasing the mobility of the tuberculous lung.

The chronic lesion, found over the tuberculous chest, will usually be found to be a group lesion of the upper thoracic. The fact that this is a chronic condition, and that it is present in a tuberculous individual, might lead us to conclude that the disease is a result of the spinal condition. Granting that it may have been a contributing factor in the development of the disease, Nature tends to compensate and many of these lesions can now be considered adequately compensated for. Chronic lesions, as a rule, are not corrected as readily or as easily as acute lesions and more time and force is required in their correction. Therefore, to proceed to correct them, particularly in view of the character of the pulmonary pathology, would oftentimes be to meddle with, rather than aid, Nature.

The treatment of tuberculosis in any tissue of the body calls for immobilization of the part as nearly as possible. This is no less true in tuberculosis of the lung, but the character of this organ renders its absolute immobilization impossible, and we must be content with rest as a substitute. Rest, then, is relative immobilization and literally means restricted or diminished motion. Restricted motion, which we obtain through rest of the lung, diminishes, in proportion to its extent, the dangers of complications, such as breaking down of recently formed fibrous tissue, increase in size and clinical significance of the already established tuberculous focus, dissemination of infectious tuberculous material (by way of the bronchial tree) into other parts of the same and into the opposite lung, pulmonary hemorrhage, spontaneous pneumothorax, etc.

In view of all this, I am making no attempt to be specific in my technic. I am more concerned

(Continued on page 341)

The Cranial Vertebrae

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INTRODUCTION

Complete compilation of discussions which have been published in medical literature concerning the possible nature of the cranial bones would produce a notable document in medical history. This article will be confined to an attempt to establish, to the satisfaction of those members of the osteopathic profession who will follow its presentation with care, that (1) the bones of the skull are true vertebral parts, irregularly modified and irregularly distributed, but, in their ontogenesis repeating the phylogeny peculiar to vertebrae; and, that (2) these irregularly modified vertebrae which constitute the bones of the skull, when their parts are adequately described and descriptively assembled, are three in number. If these things can be established as facts, they readily will be seen to be of cardinal consequence in the science of osteopathy.

The significance is manifest. If cranial vertebrae exist, three in number, irregularly modified, but capable of being described morphologically and assembled descriptively, they, perhaps, therefore, may be dealt with intelligently, by osteopathic methods.

Interpretative study of the morphology of the bones of the skull best begins with that stage of the embryo in which the fetal membranes, already completely formed, are about to enter upon their mutual evolvement of the earliest of the fetal organs. This stage is represented schematically in Fig. 1.

In establishing the sequences of metamorphoses, the fact must not be overlooked that in the human embryo the fetal membranes developed from the beginning as three concentric closed sacs respectively surrounding three concentric closed cavities, and, that each concentric closed cavity encloses its particular, specially fabricated, colloid.[1] This arrangement does not hold true of forms below the Placentalia.[2] In the Placentalia, these three concentric membranes are named, from without inward, the trophoblastic sac, the yolk sac, the amniotic sac. The cavities are named, in the same order, from without inward, the trophoblastic cavity, the yolk cavity, the amniotic cavity; and the colloids, in the same manner, the trophoblastic colloid, the yolk colloid, the amniotic colloid.[3]

PRESENTATION

I. Formation of Embryonic Plate.—At the inception of this stage of fetal growth in which the fetal membranes will build in the cellular matrix out of which the archaic fetal organs shall be broached, the amniotic sac descends within the colloidal contents of the yolk sac until the most dependent portion of the amniotic membrane approaches the most dependent portion of the yolk membrane.[2]

In this position that part of the most dependent portion of the amniotic membrane which has come, thus, closely to overlie the most dependent portion of the yolk membrane evaginates; and, that part of the most dependent portion of the yolk membrane which has come, thus, closely to underlay the most dependent portion of the amniotic membrane invaginates. Each membrane, thus, forms a leaf of tissue which approaches its fellow leaf of the other membrane. However, this approximation of the upper leaf and the lower leaf does not result in a fusion. A perceptible layer of yolk colloid remains between them. The above formation, as completed, is known as the embryonic plate.

Next, the two layers of the embryonic plate mutually assume contours which are convex, the convexity occurring at the expense of the amniotic cavity. They remain parallel, and continue to be separated by the portion of yolk colloid.

II. The So-Called Primitive Streak.—The tempo of the further proliferation of the cells of the two layers of the embryonal plate is not synchronized for all portions of the structure. This dissynchronism causes failure of the early parallelism of the two layers, the convexity of the upper plate increasing more rapidly than does that of the lower.

Also, whether due to the spiral, *vis à tergo*, direction taken by the known waves of pulsation which are now passing at a rate of from twelve to twenty times a second[4] over the amniotic sac as they are set up at this stage by the intrinsically generated rythmic alternate contraction and relaxation of the cilia[5] which now appear on the inwardly directed surface of the cells of the amniotic sac of the placental mammals[6]; or, whether due to a distinct ionic polarization of the particles suspended within the amniotic colloid[7], thus bringing a transposition of defining materials to one pole of the amniotic leaf of the embryonic plate; or, whether due to a polarization of light[8] by the pigment granules which abound within the cytoplasm of the cells of the amniotic membrane exclusively, thus retarding proliferation at one pole, or, enhancing it at the opposite pole, or, both; it does occur that one half of the cap-on-a-ball shaped amniotic leaf rises higher than does the remaining half.

III. The Highest Cells of the Arc.—Integration of the points made by Keith[9] from his assemblage of the findings of Peter, of Möllendorf, and, of Florian,[10] in their respective studies of the early human embryo; and, the points made by Jenkinson in his comparison of the morphological findings of Assheton, van Beneden, K. Mistukuri and C. Ishikawa,

1. Colloid: "Any non-crystalloid substance; any substance whose hydrates are gelatinous. The colloids are slowly diffusible rather than soluble in water and do not pass through animal membranes."—The American Illustrated Medical Dictionary by W. A. Newman Dorland. Ed. 11. W. B. Saunders Company, Philadelphia, 1922.

2. Jenkinson, J. W.: Vertebrate Embryology. Oxford University Press, Humphrey Milford, London, 1925.

3. Priority in naming colloids is believed to be claimable.

4. Starling, Ernest Henry: Principles of Human Physiology. Ed. 4. Lea and Febiger, Philadelphia, 1920, p. 201.

5. Howell, William H.: Textbook of Physiology. Ed. 8. W. B. Saunders and Company, Philadelphia, 1922, p. 58. Also references quoted by Howell as follows: Verworn, "General Physiology," English translation by Lee; Pütter, "Ergebnisse der Physiologie," 1922, vol. ii, part 2; Engelmann, article "Cils Vibratils," in Richet's "Dictionnaire de Physiologie," vol. iii, 1898.

6. Jenkinson: Ibid. In the anamniate frog embryo, the body is at this stage externally ciliated. (p. 155).

7. Priority of observation claimed.

8. Priority of observation claimed.

9. Keith, Sir Arthur: Human Embryology and Morphology. Ed. 5. William Wood and Company, Baltimore, 1935. (p. 44).

10. Florian, J.: Jour. Anat., 1930, lxiv, 45. Referred to by Keith, ibid., p. 50, together with the following references: Hill and Florian: Phil. Trans., 1931, ccixx(B), 443, and Jour. Anat., 1931, lxv, 243;

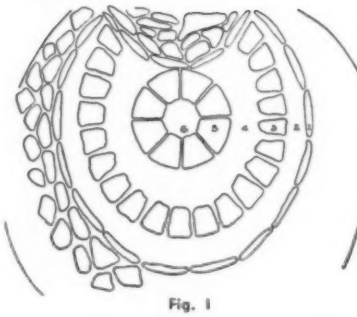

Fig. 1

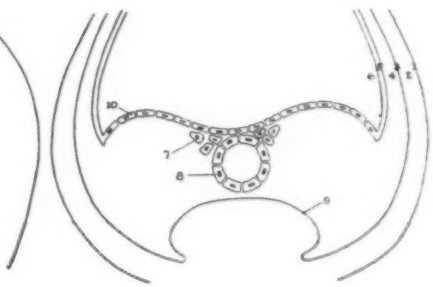

Fig. 2

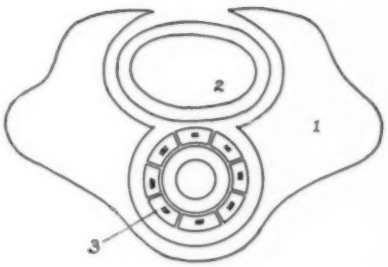

Fig. 3

These schematic drawings represent early stages in the growth of the embryo. The structures numbered one to six inclusive in **Figs. 1** and **2** represent (1) the trophoblast, (2) trophoblastic cavity, (3) yolk membrane or sac, (4) yolk cavity, (5) the amniotic sac, (6) amniotic cavity. In **Fig. 2** the structure marked (7) represents paraxial mesoderm, (8) the notochord, (9) and (10) respectively the lower and upper layers of the embryonic plate. In **Fig. 3** the following structures may be identified: (1) vertebral bow, (2) neural canal, (3) notochord with its surrounding sheath, indicating early stage of development of centrum.

H. Schauinsland, and others[11] in his chapter on the germinal layers, and in his later chapter on the amnion of the Placentalia based upon Webster, Sir W. Turner, F. Graff von Spee, and others,[12] suggests the reasonableness of the conclusion that it is the cells which form the highest point of the arc of this new convexity of the amniotic leaf of the embryonic plate which now take up the sequence.

Apparently, these cells are the homologue of the dorsal lip of the blastopore of the anamniates; for, that process which now goes forward in the human embryo proceeds as a parallel of that which occurs in a corresponding stage of the early formation of the germinal layers in the lower vertebrates.[13]

As these cells proliferate, they spread along the margin of the upper layer of the embryonic plate. In describing this growth in the anamniates, Jenkinson[13] says, "This is" seen as a "deeply-pigmented rim bounding a groove, placed parallel to the equator, and a little below it, at that point in the boundary between the pigmented and unpigmented regions of the egg where the latter area is most extensive." Adapting what he further relates to what we find occurring homologically in the human ovum, we find "the rim of the groove begins to travel downwards over the surface" of that portion of the yolk colloid which intervenes between the upper, amniotic, and the lower, yolk, leaf of the embryonic plate "towards the" yolk-sac leaf, "the area over which it passes becoming covered by cells which are as deeply pigmented as those of" the amniotic-sac leaf, itself.

"At the same time, the rim elongates, becoming crescentic, in other words, the process of rim formation and overgrowth are extended to right and left along the margin of the pigmented" amniotic-sac leaf of the embryonic plate of the human embryo, "and the lateral lips of the blastopore come into being."[13]

It is the mutual approach of these two lateral lips which cause that groove-like patterning of the upper surface of the greater convexity of the amniotic leaf of the human blastopore which when first observed, and, not understood by its observers, was named by them "the primitive streak." It is not a streak. And it is not primitive in the sense of being an earliest observable condition.

IV. Invagination of So-Called Primitive Streak.—The two lateral lips of the blastopore have now become the two lateral raised margins of the so-called primitive streak; the dorsal lip has become the overhanging margin of the raised cephalic end—this latter structure is sometimes known as Hensen's node.

The next active proliferation of cells which occurs takes place in that microscopic region which lies between these two raised lateral borders of the groove, and, just beneath the raised cephalic end of the cleft. These cells, as they proliferate, evaginate, but do not eradicate, the floor of the cleft, thus penetrating that part of the yolk colloid which has persisted in its position between the upper, amniotic, leaf and the lower, yolk-sac, leaf of the embryonic plate, by entering that space which had remained, intact, between these two layers of the plate. Here the evaginating cells proceed cephalad.

V. The Endodermal Plate.—While this last process has been under way, active proliferation of the cells of the lower, yolk-sac, leaf of the embryonal plate have metamorphosed it into a plate of cells which is known as the endodermal plate.

VI. The Notochordal Plate.—As the cells which have evaginated the anterior portion of the floor of the cleft formed by the two lateral lips of the blasto-

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Bryce, Prof. T. H.: Trans. Roy. Soc. Edin., 1924, liii, 533; Asar, Y.H.: Jour. Anat., 1932, lxvi, 14 (in rabbit); Streeter, G. L.: Contrib. to Emb., xix, 73 (in pig).

On p. 24 Keith refers to the following: Florian, ibid.; Hill and Florian, ibid., 1931, lxv, 243; Adelmann, H. B.: Amer. Jour. Anat., 1922, xxxi, 55; Bryce, T. H.: ibid.; Streeter, G. L.: Contrib. to Emb., 1927, xix, 73; Assheton, R.: Quart. Jour. Micr. Sc., 1909, liv, 221; Simoes Raposo, L.: Compt. Rendu, L'Assoc. des Anat., 1925 (Turin); Waddington, C. H.: Phil. Trans., 1932, ccxxi (B), 179.

11. Jenkinson: Ibid., p. 151, cites the following references: Hubrecht's paper on the early ontogenetic phenomena in Mammals. *Quar. Jour. Micr. Sc.*, 1909; van Beneden, E.: Untersuchunger über die Blätterbildung, den Chordakanal und die Gastrulation bei Säugetieren. Anat. Anz. iii, 1888; Bonnet, R.: Beiträge zur Embryologie des Hundes. Anat. Hefte, 1te Abt. ix, 1897; Brauer, A.: Beiträge zur Entwickelungsgeschichte der Gymnophionen. Zool. Jahrb. x, 1897; Dean, Bashford: The early development of gar-pike and sturgeon. Jour. Morph. xi, 1895; Dean, Bashford: On the embryology of *Bdellostoma stouti*. Festchr. f. C. von Kupffer, Jena, 1899; Henneguy, L. F.: Embryogénie de la truite. Jour. de l'Anat. et de la Phys. xxiv, 1888; Jenkinson, J. W.: Remarks on the germinal layers of Vertebrates and on the significance of germinal layers in general. Mem. Manchester Lit. and Phil. Soc. 1, 1906; Kerr, J. Graham: The development of Lepidosiren paradoxa. Quart. Jour. Micr. Sc. xlv, 1901; Mitsukuri, K., and Ishikawa, C.: On the formation of the germinal layers in Chelonia. Quart. Jour. Micr. Sc. xxvii, 1886; Rückert, J.: Die erste Entwickelung des Eies der Elasmobranchier. Festschr. f. C. von Kupffer, Jena, 1899; Schauinsland, H.: Studien zur Entwickelungsgeschichte der Sauropsiden. Zoologica, xvi, 1903; Semon, R.: Die Furchung und Entwickelung der Keimblätter bei *Ceratodus forsteri*. Zool. Forschungsreise in Australien, 1901; Shipley, A. E.: The development of Petromyzon fluviatilis. Quart. Jour. Micr. Sc., xxvii, 1887; Sobotta, J.: Die Gastrulation von *Amia alba*. Verhandl. Anat. Gesellsch. Berlin, 1896; Whitman, C. O., and Eycleshymer, A. C.: The egg of *Amia* and its cleavage. Journ. Morph. xii, 1897; Will, L.: Die Entwickelungsgeschichte der Reptilien. Zool. Jahrb. vi, ix; Wilson, H. V.: The embryology of the sea-bass (*Serranus atrarius*). Bull. U.S. Fish Commission, ix, 1889; Wilson, J. T., and Hill, J. P.: Observations on the development of *Ornithorhynchus*. Phil. Trans. Roy. Soc. Series B, cxcix, 1907; Ziegler, H. E.: Beiträge zur Entwickelungsgeschichte von *Torpedo*. Arch. mikr. Anat., xxxix, 1892.

12. Referred to by Keith, ibid.

13. Jenkinson: Ibid., p. 111.

pore, i.e., the "primitive streak", grow forward between the ectodermal plate, above, and the endodermal plate, beneath, they, too, by spreading sidewise somewhat as they proceed forward, form a plate. This plate, so formed, is called the notochordal plate.

VII. The Prechordal Plate.—A thickening, by cell proliferation, of that portion of the endodermal plate which underlies the ectodermal plate, i.e., the anterior portion of the endodermal plate, forms an important, though transient, structure, the prechordal plate.[14]

VIII. The Cranial Vertebrae. — The future evolvement of those structures out of which the cranial vertebrae are to become differentiated is to occur at the point where the anterior, or cephalic, end of the growing notochordal plate comes to overlie the cells of the posterior, or caudal, end of the backward growing prechordal plate. This overlapping is very slight, as both processes of plate formation cease at this point. The embryo is now less than 3 mm. in crown rump length, and is about three weeks old.

IX. The Notochord.—The cells along a mesial sagittal line of the notochordal plate further proliferate, and, evaginating, become separated from the plate as a long, hollow, cylinder the walls of which are composed of a single layer of cells. (See Fig. 2.) This is the notochord. Around it the entire human axial skeleton is to evolve.

X. The Mesodermal Plate.—The remainder of the notochordal plate, growing sidewise, and spreading outward through the colloidal substance of the yolk cavity, forms a sheet of cells on either side of the notochord, which sheets lie between the ectodermal plate and the endodermal plate and are known as the mesodermal plates.

XI. The Germinal Layers.—Thus has occurred at this stage of the evolvement of the human embryo the completion of the formation of the homologue of the germinal layers of the anamniate vertebrates.

In this article the endodermal plate has no further significance.

XII. The Paraxial Mesoderm.—That portion of the mesodermal plates which comes to lie along either side of the notochord further proliferates, and separates itself from the balance of the mesodermal plate. These two long masses of mesodermal cells are known as the paraxial mesoderm. (See Fig. 2.)

XIII. Segmentation.—Segmentation occurs only in the paraxial mesoderm. It begins at that portion of the mesoderm which lies at a cross-section level with that region within the yolk colloid in which the anterior end of the notochordal plate has come to overlie the posterior end of the prechordal plate, and, it proceeds both cephalad and caudad from there.

"By the end of the 4th week when the embryo has grown to a length of about 3 mm., the process has reached the first coccygeal segment, there being at this time three occipital [he calls them occipital, they are, in truth, cranial] and thirty body somites. Thereafter segmentation proceeds slowly in the caudal region, there being 8 or 10 caudal somites at the end of the sixth week."[15]

In segmentation the paraxial mesoderm undergoes differentiation transversely. In this differentiation two primary structures are evolved which alternate, each with the other, in occurrence throughout the entire length of the paraxial mesoderm. These structures were given the name somite, for the one, and, intersegmental septum, for the other. Thus a segment has come to be known as being formed of a somite and an intersegmental septum.

Within the somite a myotome forms, out of which, later, muscles of the segment are evolved. Within the intersegmental septum a vertebral body, its transverse processes, its spinous process, its rib, the artery of the segment, and the peripheral nerve of the segment, are evolved. The vertebral body, however, is evolved differently than are the processes and the ribs, each of which latter, also is evolved individually.

Within the notochordal space, which corresponds to the somite, the notochord evolves the intervertebral disc. Priority in citation of the importance of this independent activity of the notochord, as indicative of the necessity of an alteration of the standard interpretation of the manner in which the development of the entire bony axis takes place, is here claimed.

XIV. The Notochordal Sheath.—After the notochord separates from the balance of the notochordal plate, it further differentiates into a long, hollow, cylindrical rod, or tube, made up of a single layer of vacuolated cells. This rod lies within the yolk colloid between the two layers of the embryonic plate.

The individual units of this differentiated rod of secretory cells are derived generically from the dorsal lip of the "primitive streak" which latter is a differentiation of the amniotic leaf of the original embryonic plate. They have come to lie within yolk colloid. This single layer of secretory cells now builds around the outer surface of their communal structure, the notochord, a cuticular membrane, referred to by Jenkinson[16] as the membrana elastica interna. This point of the heritage and placement of these cells of the notochord and the manner of the notochordal ensheathment is of primary interest here for it is out of this combination, i.e., the notochord and its ensheathing cuticular membrane, that the centra of all vertebrae are formed, as are formed by it, also, the nuclei pulposi of all intervertebral discs. No other structures are formed by the notochord and its sheath except, as we shall attempt to prove in a later article, possibly the posterior one third of the posterior, or so-called "neural," lobe of the hypophysis.

XV. The Sclerotome. — Along the notochordal border of the paraxial mesoderm a new modification of mesodermal cells now occurs. These newly modified cells rapidly separate from the paraxial mesoderm and, migrating to a position which is part way between the paraxial mesoderm and the notochord, come to lie on either side of the notochord where they form a new cell structure which, growing inward below the notochord and upward on either side of it, gradually comes to surround the notochord and its ensheathing membrana elastica interna. This structure is called the sclerotome.

14. The significance of this structure will be indicated in a later article concerning the pituitary gland. In this same later article, the possible fate of the extreme anterior portion of the notochord will be discussed.

15. Keith: Ibid., p. 50, and Jenkinson, Ibid., p. 162.

Plate I

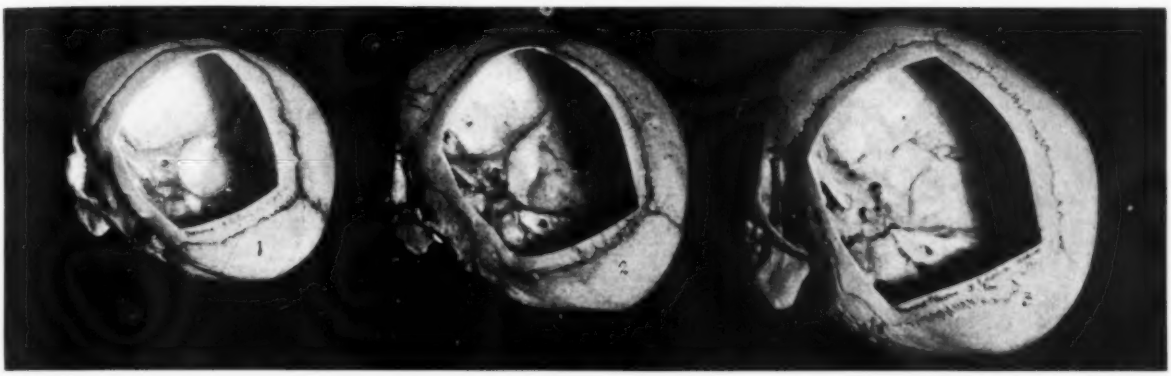


Plate 2

Studies of a series of skulls prepared at Saint-aubin-d'ecrosville (eure), Etablissements du Docteur Auzoux reunis a Tramond-Rouppert, rue de L'Ecole de Medecine, Paris, France, under the direction of Dr. Charlotte Weaver of Paris, France, and Akron, Ohio, U.S.A., to show the interrelationships of individual parts of the base of the human skull.

Plate I was photographed in direct light. A window was cut in the left parietal bone of each skull in order to show the internal aspect of the interrelationships. Figure 1 of Plate 1 is that of an 8 month prenatal skull. Figure 2 of Plate 1 is that of a 3 to 5 month postnatal skull. Figure 3 of Plate 1 is that of a skull 3 to 5 years of age.

Plate II was photographed in transillumination and is numbered as in Plate 1. Note that in the 3 to 5 month postnatal skull the amount of intervertebral disc substance is actually greater than in the 8 month prenatal skull. This study shows up beautifully the interarticular spaces.

Note that in the preparation of the specimens the disc was retained intact in the 8 month prenatal, and in the 3 to 5 month postnatal skulls, but that in the 3 to 5 year old specimen the disc has been destroyed in order to show the actual planes of motility of the articulation with the bones in situ.

Photographs by Hitchkock and Bork. X-ray plates by Dr. Edwin C. White in cooperation with Dr. Weaver.

Between the notochordal sheath and the notochord no perceptible space exists. Between the surface of the notochordal sheath and the sclerotome lies yolk colloid.

XVI. The Vertebral Bow.—After it has thus come to surround the notochord, the sclerotome is called the vetebral bow. In Fig. 3, this formation is indicated. From the vertebral bow all morphological parts of the osseous vertebrae are formed, i.e., all parts other than the centra. The cartilaginous portion of the intervertebral disc, (i.e., the fibers which are found in the adult disc) which surrounds the nucleus pulposus[17] is also formed by the vertebral bow; they become the intervertebral ligaments. The nucleus pulposus is formed by the notochord and the notochordal sheath.

In its evolvement the vertebral bow differentiates itself morphologically into the hypochordal bow and the neural arch; the hypochordal bow being that portion of the vertebral bow which curves around the ventral and ventrolateral surfaces of the notochord; the neural arch being that portion which, rising dorsad along the lateral walls of the notochord, continues upward to the most dorsal portion of the lateral wall of the neural tube where it arches over the neural tube toward the mesial sagittal plane. Here, it fuses, and, in the plane of fusion, gives rise to the series of spinous processes of the vertebral column.

XVII. Morphological Parts of the Neural Arch.—Later, at the stage of ossification, the neural arch becomes differentiated into the left and right pedicles, and the left and right laminae. The pedicles fuse with the centrum in the formation of the body of the vertebra. The lamina is that portion of the ossified vertebra which is developed in that portion of the vertebral bow which arches over the dorsal border of the neural tube and approaches the mesial sagittal plane.

Between the lamina and the pedicle, a little earlier than the period of their ossification, the lateral border of the vertebral bow proliferates transversely, to a slight extent, and on either side. These transverse projections, when ossified, become the transverse processes of the vertebrae.

XVIII. Cephalic Portion of the Paraxial Mesoderm.—Much confusion in interpretation, and, therefore, in terminology, exists concerning the cephalic portion of the paraxial mesoderm. A certain head structure, present in that cephalic portion which Keith calls the neocranium, which is called the prechordal plate, is universally observed and described but always as an independent occurrence, and, apparently, is never identified as the most anterior development of the paraxial mesoderm.

Another paraxial mesodermal head structure, the basilar plate, within which the parachordal cartilage (not to be confused with the parachordal plate, which is formed within the anterior end of the endodermal plate) is evolved, is, also, universally observed and described. This so-called basilar plate is found in that head section which Keith calls the paleocranium, i.e., that portion of the cephalic body axis lying between the prechordal mesodermal plate of the head and that portion of the paraxial mesoderm which surrounds the notochord at the disc between the occipital and the atlantoid segment.

It is known that the basilar portion of the occipital bone and the basilar portion of the sphenoid bone (confusion exists concerning the morphological identity of this portion of the sphenoid) are developed within the basilar plate. It is known that the dorsum sellae is developed within the basilar plate. But as to the real identity of the dorsum sellae no word can be found. That it is the centrum of the first of the cranial series of vertebrae has remained for this discussion to point out and to attempt to prove. Here, again, priority of observation is claimed.

That the presphenoid (a morphological portion of the sphenoid in contradistinction to the basisphenoid) is developed within the trabeculae cranii of the prechordal plate is known. But, that these trabeculae cranii are the true cranial homologues of that structure which in the spinal vertebrae is identified as the hypochordal bow, has, also, apparently, remained for initial citation in this discussion.

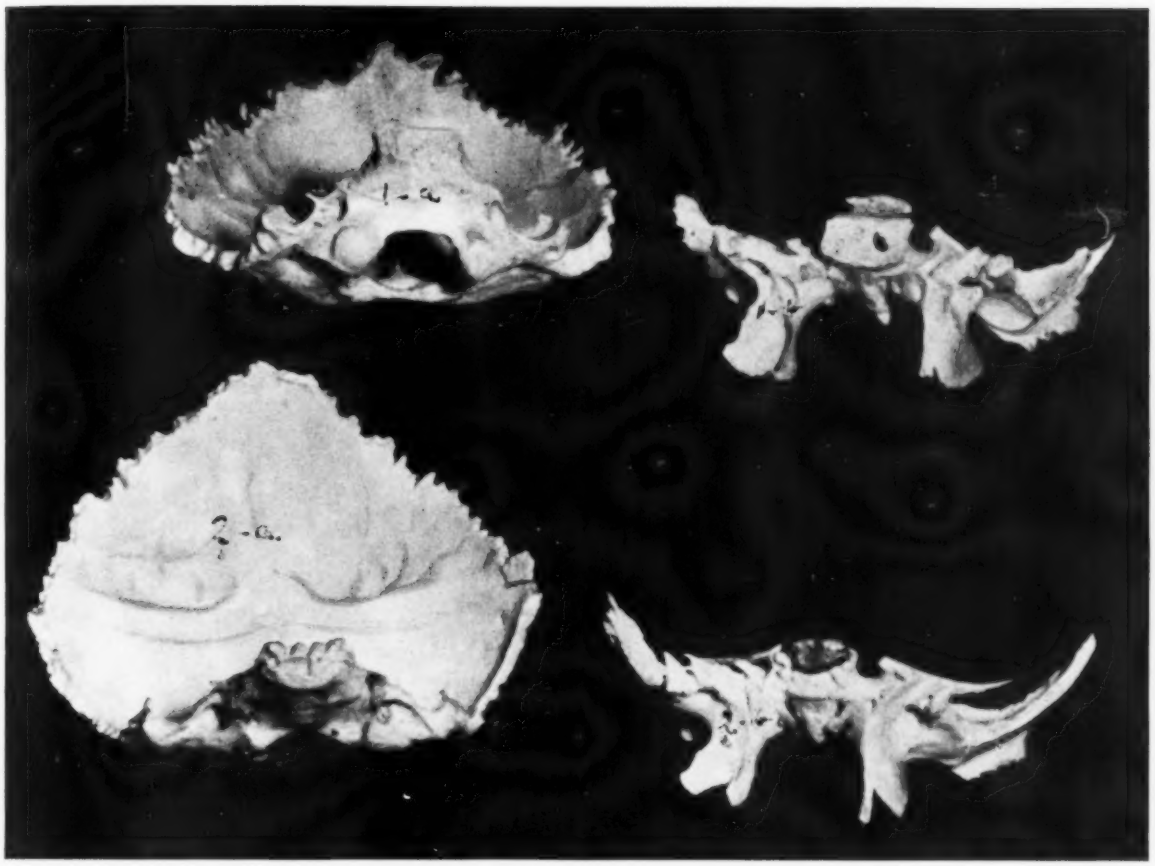
The literature commonly mentions the fact that the hypochordal bow "is lost" in all vertebrae other than the atlas in which it is represented by the false "body" of the atlas, with the tip of the odontoid process of the axis representing the centrum of the body of the atlas. In this respect, Keith says, "The atlas represents the completed bow of the first cervical vertebra. The body of the vertebra fuses with the body of the second and forms the odontoid process. The remnant of the disc between the first and second vertebrae can sometimes be seen when the odontoid is split open. The suspensory and check ligaments are the representatives of the disc between the last occipital segment and the first cervical."

Keith lumps all bony structures formed around the notochord in this region as occipital, and calls these parts, indiscriminately, occipital segments, occipital vertebrae, etc., being very hazy and confused concerning anything anterior to the atlas. He states that the basilar plate is formed in the "mesenchymal sheath" of the notochord. It would be difficult to know whether he means the membrana elastica interna, the vertebral bow, or the periosteal sheath. He further states that the "basilar plate may be regarded as a continuation of the vertebral bodies, while the lateral processes . . . may be regarded as a continuation of the neural arch series."

Others are even more vague, or more confused or both, concerning these parts. In so far as it is possible to ascertain, priority is believed to exist here, then, also, in the matter of exact differential identification of the prechordal plate and its derivatives, and of the basilar plate and its derivatives. The basilar plate is the forward extension of the following structures en masse, viz.: the notochord, the notochordal sheath, the neural arch portion of the vertebral bow. The prechordal, which first appears as the two irregular plates of cartilage which are known as the trabeculae cranii, is the most anterior extension forward of any portion of that ubiquitous, bilateral, cell-formation, the sclerotome, the trabeculae cranii being nothing other than the cephalic homologue of the hypochordal portion of the vertebral bow.

17. Dwight, Thomas: Human Anatomy. Edited by George Arthur Piersol. Ed. 9. J. B. Lippincott Company, Philadelphia, 1930, p. 132.

Plate 3



Studies of sphenoid bone and occipital bone. Figures 1-a and 1-b show the usual method of sawing through the base of the skull when preparing it for anatomical study of disarticulated skull. Figures 2-a, and 2-b show successful disarticulation of the modified intervertebral articulation which actually exists between basiocciput and basisphenoid. Note that Figure 2-b shows the intervertebral disc still adhering to the articular surface of the basisphenoid.

Research through the literature of various countries brought to light the following facts: (1) that according to findings reported in German literature, this articulation ossifies at 12 to 14 years of age; (2) according to findings reported in French literature, it ossifies at 14 to 16 years of age (Sappey, B. E., and others), and that according to findings reported in the literature of Great Britain, it ossifies at 17 to 19 years of age (Thomas Dwight and others). No findings have been found as compiled concerning American skulls. In my own research among American skulls, I find indications, occurring frequently enough to suggest an American norm, that this basioccipital-basisphenoid intervertebral articulation remains as a modified intervertebral articulation as late as 21 to 25 years—many times throughout life, but this latter would be a wide variant of the norm.

If it be recalled, here again, (1) that the embryonic plate develops as a two-layered cap-on-a-ball shaped formation, (2) that the notochordal plate invaginates the space which has remained intact between these two layers, (3) that this invagination occurs at the posterior pole of the embryo and proceeds cephalad, (4) that at a given point in this cephalad progression the process ceases, then, when, added to these given structural findings there occurs the special development which now takes place in the most anterior portion of the two leaves of the embryonic plate, then, head-segmentation, as it actually occurs, falls into a reasonable light.

In speaking of the mesodermal plate, mention was made of the formation of the parachordal plate at its most anterior extremity. The strategic point here is the fact that this parachordal plate does not further proliferate; but, the head end of the amniotic leaf of the embryonal plate does proceed to grow, and that prodigiously, for the size of the embryo. Before the onset of segmentation, this anterior portion of the cap-on-a-ball shaped amniotic leaf has so excelled in cell-proliferation that it has come to surround completely the entire anterior end of the embryo, and, then, to fold back on the ventral side so that a formation has occurred in which that portion of the amniotic leaf which had occupied the most anterior portion of the anteroposterior axis of the embryo, and was posterior to the notochord, now has come to occupy a position ventral to the notochord and lying fully one-half of the entire length of the embryo caudal to the extreme anterior end of the anterior pole. A careful study, and presentation, has been made of this by His, together with illustrations. Also, Keith is found to say, in a description of the development of the neural tube, "With the *mid*-brain we reach the anterior limit of the primitive neural tube; it lies over the terminal cephalic part of the notochord." (Italics mine.) Were he to have said "folds over," the description would have been more graphic.

The *fore*-brain continues slightly in a caudal direction on the ventral surface of the terminal cephalic portion of the notochord. Around it, in this position, the head and face structures evolve. Thus, the car-

Plate 4

Plate 4, at the left, is that of an 8 month prenatal skull.

Plate 5, below, is that of a 3 to 5 month postnatal skull.

Plate 5

Plate 6

X-ray study of skull of child 3 to 5 years of age

Plates 4, 5 and 6 are life size x-ray studies showing details which, when compared with the photographic studies, clarify the intricacies of the co-relationship of parts.

tilaginous face structures are easily seen to be the most anterior developments of the ventral, or hypochordal, portion of the vertebral bow. Bent back, thus, beneath itself, the extreme tip of the head of the embryo lies in a cross-level of the anteroposterior embryonic axis with the most caudal portion of that structure which is to become the centrum of the occipital, or third cranial, vertebra. Thus, as the hypochordal bow differentiates completely into its greatest morphological expectancy, and throws out its typical, cephalic, ventral formations, these come to involve the structures out of which certain of the ventrobasal bones of the skull and all of the bones of the face are to develop. And, as segmentation sets in, the structures which, as the head gradually erects itself, are carried forward, lie in their original cross-level relationships. These structures, as they are carried upward, come to lie, in the erect human, in a position which, though on a morphological segmental level with the first, second, and third cranial vertebrae, is, actually, geographically, anterior to the bodies, respectively, of these vertebrae. This dislocalization, however, is not an unusual finale of segmentation, as witness: the spinous processes lie out of the level of their respective vertebral bodies, etc.

By the eighth week the forward movement of the head in its extension evolvement has carried these correlated portions of the hypochordal bow so far forward that they have come to lie as Warren Lewis has depicted them. (See Figs. 145 and 146 in Keith, ibid., p. 160.)

As to the arguments that the flat bones of the skull develop intramembranously rather than intrachondrally, a comparison of several sets of sequences will answer these apparent discrepancies: (1) The hypochordal part of the vertebral bow is known to develop prior to the development of the neural arch part throughout the complete embryonic axis. (2) "The centers for ossification for neural arches appear first (at about the seventh week) in the anterior end of the spine, the date becoming later the more posterior the vertebrae." (3) And, the centers of ossification of the bodies of the vertebrae appear first in mid-dorsal region and spread forward and backward. (4) The odontoid process begins to ossify at the fourth month. (5) The membranous skull, i.e., the calvarium, begins to ossify about the eighth week.

As a consequence of this integration of known sequences, we find that the time of ossification of the flat bones of the skull is as it should be for sequence in the ossification of neural arches. Since the calvarium is so huge in comparison to the other portions of the neural tube which the vertebral bow must grow up to surround, it occurs naturally that ossification precedes chondrification in the calvarial portion of the neural arch, with the result that chondrification, as such, does not occur. It missed out in the shuffle.

Other similar points, when pieced together in the order of their actual established sequences, and also, (and this, importantly) in the order of the relative sequences of these actual, established, sequences, will be found but the more firmly to fix our point. With this interpretation of the ontogenesis of the various parts of the skull, and of the face, morphological assemblage of the evolved parts becomes a possibility.

Remembering that the morphological parts of a vertebra are: *(a)* centrum, *(b)* hypochordal bow, *(c)* pedicles of neural arch, *(d)* transverse processes, *(e)* laminae of neural arch, *(f)* spinous process, *(g)* ribs, and *(h)* articular processes, let us take up and assemble as follows:

A.—The occipital, or third cranial, vertebra:

(a) Centrum—Basiocciput, or centrum of body of first occipital vertebra, composed of notochord and notochordal sheath elements.

(b) Hypochordal bow—Temporal Petro-Mastoid.

(c) Pedicles of neural arch—exoccipital, or two lateral chondylar.

(d) Transverse processes—Temporal Petro-Mastoid, i.e., periotic capsule. (Keith, p. 263) Cartilage of cochlear part fuses with parachordal cartilage; vestibular part becomes continuous with occipital plate.

(e) Laminae of neural arches—supraoccipital, or tubular squamous.

(f) Spinous process—Interparietal.

(g) Ribs.

(h) Articular processes (8).

B.—Sphenoid, or second cranial, vertebra:

(a) Centrum—Basisphenoid.

(b) Hypochordal bow—Presphenoid.

(c) Pedicles of neural arch—Sphenoid turbinates.

(d) Transverse processes—Orbitosphenoid.

(e) Laminae of neural arches—Parietals.

(f) Spinous process—Pre-Interparietal, or Os Incae.

(g) Ribs—Alisphenoid.

(h) Articular processes (8).

C.—Dorsum sellae, or third cranial vertebra:

(a) Centrum—Dorsum sellae.

(b) Hypochordal bow—Nasal septum.

(c) Pedicles of neural arch—Maxillary processes.

(d) Transverse processes—Ethmoids.

(e) Laminae of neural arch—Frontals.

(f) Spinous process—Post-frontal (in man this bone is that part which fuses with that part of frontal which articulates with great wing of sphenoid and malar).

(g) Ribs.

(h) Articular processes (8).

It will be seen that a complete and final assemblage of the bones of the face and smaller bones of the front part of the base of the skull has not been attempted. This can be done by those of the profession who care to carry this research forward into its suggested minutiae. That the corresponding parts will lend themselves accurately to vertebral assemblage is a matter of reasonable expectancy, and these minutiae would make a very worthy addition to this research into the matter of identification of the cranial and the facial bones as morphological parts of true cranial vertebrae.

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The Relation of Artificial Fever and Body Movement to Lymph Flow

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In a recent preliminary paper* I reported some beneficial results in certain disease conditions from the use of a device by which the so-called "lymphatic pump" is applied to patients who at the same time are undergoing artificial fever treatment. I expressed the hope that this paper would stimulate thought as to how we can best apply osteopathic manipulative treatment during the peak of induced fever, at which time, it seems to me, it is most advantageous.

The present paper is related to the previous one not by virtue of reporting additional observations, but rather because it calls attention to certain experiments and observations reported by workers outside the osteopathic profession, having to do with the lymphatic system and with the effect of movement and of heat on the production and circulation of lymph.

This paper consists very largely of quotations, the rest of it being made up of comments on those quotations. Its aim is to call attention to certain effects resulting from the increased production of tissue fluid and lymph in the body; certain methods of stimulating such production and circulation without heat; certain results from the use of heat, and certain results from the use of a combination of motion and heat. In short, it reports a number of facts which seem significant in any study of a combination of "lymphatic pump" and artificial fever treatment.

The volume from which I shall quote is a monograph† published in 1933, whose writers say: "In the careers of many physiologists are found lymphatic periods." (xi) They add that although the problem of the lymphatic system has been studied for more than three hundred years it is "a task still far from finished. In justice to the anatomists it may be said they have done better than the physiologists." (xi)

All scientific study has gone forward by the method of trial and error, and the study of the lymphatics, is no exception. If my preliminary article, already referred to, contained conjectures which will later be shown to be erroneous, and if some of the quotations herein or the comments on those quotations shall be proved ill-founded, it is believed that the labor of setting them down and getting people to think will not have been in vain. As the writers whom I am quoting have said: "A faithful summary of the literature has little value unless the reader knows what to reject and what to believe. . . . Time will surely show that many of our ideas are wrong, but if our work serves as an irritant and excites critical experiment we shall be pleased—no less so if experiment proves our conceptions wrong." (xiv)

In my preliminary paper* I said: "It is my experience that without manipulative treatment the fever treatment does not give the maximum value, and further, to get the best results, it is my opinion that manipulative therapy should be given *at the same time* as the fever therapy." I believe these observations are in direct line with that oft-quoted axiom of Andrew Taylor Still: "The rule of the artery is supreme." This obviously was his epigrammatic way of saying that the fundamental thing in health is a normal circulation—and this includes arterial blood, venous blood, lymph and tissue fluid.

Dr. Still had a great deal to say about lymph and its circulation, including the well-known statement: "Pathology begins with lymph stasis." Many osteopathic physicians, for the past fifteen years, have striven to derive the full therapeutic advantages offered by a free circulation of lymph through a method commonly called the "lymphatic pump." This is the practice of alternate pressure and release manually or mechanically over the thorax or the abdomen or both. The common belief is that the beneficial effects come from stimulation of the circulation of lymph. Many of the quotations to follow seem to justify this belief. They seem further to show the great advantage of using heat therapy in connection with the "lymphatic pump."

Perhaps we should begin with some definitions relating to fluids in the body and the part they play in resorting or maintaining health. The authors of the monograph we are quoting explain: "Lymph is fluid obtained from lymph vessels. Tissue fluid is the fluid in the region outside blood and lymph capillaries in the cellular interspaces. Plasma is the unclotted fluid of the blood and differs markedly from lymph and tissue fluid in protein content, and, to a less degree, in salt content. The three fluids should not be confused with one another and with blood serum, as is frequently done, particularly by immunologists uninoculated with a physiological conscience." (p. 6)

They quote other authorities[1]: "'Actually, lymph represents tissue fluid after the absorption process has been carried to as complete a stage as conditions in the blood stream permit.'" (p. 134)

Yet, so far as any actual difference in composition between lymph and tissue fluid is concerned, they say, as they[2] have said before, that lymph and tissue fluid "'possess an approximate degree of identity.'" Also that "the filtrate from the blood capillaries to the tissue spaces contains water, salts and sugar in the concentrations found in blood, together with serum globulin, serum albumin, and fibrinogen in low concentrations . . . and the protein enters the lymphatics together with water and salts in the concentration existing in the

*Hammond, R. B.: The application of manipulation during artificial fever treatment. Jour. Am. Osteo. Assn., 1935 (July), 34:516-518.
†Drinker, C. K. and Field, M. E.: Lymphatics, Lymph, and Tissue Fluid. Williams and Wilkins Company, Baltimore, Md., 1933. All quotations herein are made with the specific consent of the publishers. Italics are ours. Numbers following the quotations in parentheses refer to page numbers, Roman numerals indicating the introduction and Arabic numerals the body of the book. Where double quotation marks are used it indicates the authors made exact quotations from those whom they cite as authority. All reference numbers throughout the article relate to the references at the end of the article, all of which are given just as they appear in the book.

tissue fluid at the moment of lymphatic entrance." (p. 133)

In connection with these statements about the interrelationship between blood plasma, tissue fluid, and lymph we may do well to remind ourselves of the too often forgotten fact that blood actually bathes very few of the cells of our body and that tissue fluid, which is shortly to become lymph, is the real conveyor of nourishment to the cells and of the products of metabolism from the cells. As the writers of this book say:

"One of the principal interests we have had in our experiments upon lymph and lymphatics has been the problem of the relation of lymph to the fluid which actually bathes the tissue cells and in which the physiological reactions of the body occur." (p. 131)

Thus it will be seen that a free circulation of the lymphatic fluid will help to assure a healthful environment for the cells. This brings us to a consideration of what the investigators we are quoting have to say about means of stimulating lymph flow.

As far back as 1876 von Mosengeil[3] "injected ink into the knee and elbow joints of rabbits and found that the absorption of the ink was greatly hastened by movement and by massage of the joints. He considered the absorption to be wholly by the lymphatics." (p. 26)† In experiments[4] conducted in the last few years along this line, it is stated that, "A control rat, receiving a similar injection and kept wholly quiet, showed scarcely any carbon in the aortic glands at the end of 24 hours. The experiment was done in order to bring out the importance of motion in forcing particles into lymphatics, and this it accomplished beautifully." (p. 30)

"The pressure in the veins at the knee of the dog may be doubled when the leg muscles contract, and falls instantly to the original value, or to a lower value, on muscular relaxation. The capillaries in a part such as the foot are subjected to a steady, high, venous pressure when the individual stands at attention, and to a fluctuating pressure when he walks or runs. Motion not only moves a certain amount of extravascular fluid into lymphatics and up the leg, but it alters filtration pressures in the blood capillaries." (pp. 98-99)

"The question of the formation of lymph in muscle during activity is even more complicated. Lymph capillaries are present in muscles.[5] . . . It is known that during activity muscles swell, . . . and the muscular swelling is not a matter of simple hyperemia. The muscle contains more water, most of it probably intracellular but a part free as tissue fluid. The contractions of the muscle are peculiarly effective in forcing this fluid into the lymph capillaries and on into larger trunks." (p. 104)

While we are interested in this matter of the muscles and lymph circulation, our primary thought is that this movement also keeps the lymph circulating in and through the glandular tissues.

Immediately after these observations, the writers refer to an experiment made by Hamburger[6] who found a tremendous increase of lymph flow in connection with muscular activity, but they comment: "The effects of increased breathing and of massaging movements of the neck muscles are not eliminated in this experiment. . . ." (p. 105)

In another place they say, ". . . Massage promotes the movement and renewal of the tissue fluid by forcing proteinized material through lymphatics and back into the circulation. . . ." (p. 189)

In short, movement, active or passive, has much to do with lymph circulation. Incidentally, such circulation is stimulated not only by movement, but also by functional activity. These writers say:

"It has been our experience, as it has that of many others, that lymph in substantial amounts cannot be collected from large lymphatics except under the following [five] conditions: (1) massage or passive motion; (2) physiological activity of the part." (p. 85) (Three other conditions are given, two of which are abnormal and the other of which can easily become so.)

Commenting on many experiments performed on dogs the writers say: "One of the mysteries attending such experiments . . . is the wide variation in the amounts of lymph obtained. Dogs, apparently in the best of condition, are encountered who produce practically no lymph unless subjected to abnormal conditions. Save for an impression that young animals give more lymph than old, we lack any clue to the cause of the difference between individuals." (p. 96) It may be foolhardy, on this slight clue, to suggest the possibility that there is a much freer flow of lymph in childhood, youth, and adolescence because of higher metabolic rates. At least there is room for research as to whether there is such freer flow in youth, and if it is found that there is, then conjectures are in order as to the reasons.

It will be remembered that these writers referred not only to increased muscular activity, but also to increased physiological activity as a stimulant to lymph flow.

"Barcroft and Kato[7] concluded that: 'Increased functional activity occasions increased lymph flow. . . . The lymph flow is nearly synchronous with the metabolism in the organ caused by the activity.'"

Not only does the amount of lymph flow increase with increased activity, but its composition varies also. The authors reported at length on experiments[8] in this connection, concluding:

"It is our opinion that the tissue fluid from such a region as the subcutaneum contains the blood proteins in amounts varying roughly between 0.3 and 4.0 per cent, the high values being transient experiences. The protein content will vary with changes from *rest to activity* and with conditions which alter the permeability of the blood capillaries." (p. 141)

In addition to active and passive movement of the muscles in general, and apart from simple metabolic activity, the authors we are quoting go into the matter of thoracic movements, as in breathing—a question closely related to the use of the "lymphatic pump."

"In so far as the authors have been able to discover, there is no direct information as to the

amount, composition, or cause of movement of lung lymph. . . . The flow of lymph in other parts of the body depends mainly upon muscular movement. In the lungs the respiratory movements would seem to be the most likely factor in causing lymph flow, but direct experiments upon this point do not exist." (pp. 14-15)

In one experiment quoted[9], lymph was forced to flow in a dead dog to which artificial respiration was applied. (p. 17)

"The degree of physiological activity, passive motion or massage, will cause more rapid movement of lymph. The extent of the respiratory movement is very important for moving lymph in the thoracic duct and indeed in all the lymphatics of the abdomen and of the chest." (p. 106)

"When lymph is collected from the thoracic duct, an increase in breathing invariably augments the flow. This is due to increase in the intra-abdominal pressure during inspiration and suction of lymph into the thorax. The thoracic lymph channels empty on expiration." (p. 164)

There may be great significance in the measurements made by Lee,[10] who occluded the thoracic duct and "obtained an average pressure of 15 cm. of water in the duct of dogs. Under *sixteen* minutes of forced breathing this reached 35 cm. of water." This means that 16 minutes of forced breathing made a difference of 200 mm. of water.

Even more striking is the reference to Beck[11], who found that " 'The lymph pressure is influenced readily by pressures applied from *without* the lymphatic system, such as pressure upon the abdomen or marked change in the intrathoracic pressure.' " (pp. 109-110)

Pressure upon the thorax, pressure upon the abdomen, and a combination of the two, are used by various osteopathic physicians in administering what is called the "lymphatic pump." The favorable clinical results which are so well known to most of us are generally believed to be due to the influence of these procedures on the lymph flow, and this would seem to be indicated by Beck's observation, as well as by that of Lee, who found a difference in pressure of 200 mm. of water in the occluded thoracic duct following 16 minutes of forced breathing.

It is easily seen that the observations so far made call for much more investigation. These things need to be studied in the light of the clinical experiences of hundreds of osteopathic physicians and the carefully controlled studies of Castlio and Swift‡ at the Kansas City College of Osteopathy. The increased lymphatic circulation, whether from active movements, passive movements, or merely increased physiological activity, results in draining the tissue fluid, which calls for more such fluid to come from the blood vessels.

As to what these tissue fluids contain, as they pass through the blood vessel walls, Drinker and Field say: "Since the lymph is a filtrate from the blood capillaries, containing variable amounts of the blood proteins, one would expect the presence of antibodies, and this expectation has been realized in a number of investigations." (p. 127)

"Becht and Luckhardt[12] showed this relation between capillary permeability and antibody content of lymph when they found that if an animal is rendered passively immune, by intravenous injection of immune blood, the rise in concentration of antibodies in the lymph is more rapid in thoracic duct than in cervical lymph." (p. 128)

This observation about the concentration of antibodies in the thoracic duct being greater than in the cervical lymph is unexplained by the authors. Is not the logical explanation found in the fact that the thoracic duct drains those parts of the body containing the glands where the antibodies are made? Is not this the explanation of the efficacy of stimulation of lymph flow applied to this particular part?

It is not only antibodies which the lymph takes from the blood and transports, but also "any ferment existing in the tissues or in the blood." (p. 129) It is said of Osato[13] that; "He believed all the pancreatic ferments found their way directly into the lymph in the pancreas and found them more concentrated in the lymph than in the blood." (p. 130)

All of this brings us back to the statement already made, that we too often forget that the blood really bathes very few of our cells and that tissue fluid, which is shortly to become lymph, is the real conveyor of nourishment to the cells and the products of metabolism from the cells.

And now we come to a consideration of the effects of induced fever, whether resulting from body reactions or from the external application of heat, in the stimulation of lymph flow.

"The circulatory effects of such injections [typhoid vaccine] make it more than probable that increased lymph flow must be present during the entire febrile reaction which they induce. Fremont-Smith, Morrison, and Makepeace[14] observed the reactions in the vessels of the nail-bed after intravenous injections of typhoid vaccine."

" 'Coincident *with the onset of the fever there occurs complete stasis* in practically every visible capillary. From a normal flow this stasis reaches its climax rapidly, often suddenly, and continues until the fever has *nearly reached its height.* During the period of stasis cyanosis occurs.

" 'Just before the height of the fever is reached the blood flow in the capillaries begins again, at first slowly, but within a short time becomes enormously rapid with the appearance of capillary pulsation and the disappearance of the cyanosis. The fever now begins to fall. The rapid flow lasts throughout the period of falling temperature and often for many hours afterwards.

" 'The same series of phenomena occurs in malaria and in sodoku (rat-bite fever).'

". . . The maneuver should certainly bring about increased lymph flow. Its *total effect* is, in a sense, *to wash out the tissues through the lymphatics,* and

‡Castlio, Yale and Ferris-Swift, Louise: Effects of Splenic Stimulation in Normal Individuals on the Actual and Differential Blood Cell Count and the Opsonic Index. The College Journal, Kansas City College of Osteopathy & Surgery, Kansas City, Mo., 1932 (Oct.) 16:10-18. The Effect of Direct Splenic Stimulation on the Cells and the Antibody Content of the Blood Stream in Acute Infectious Disease. Idem. 1934 (July) 18:196-211. The Effects of Indirect Splenic Treatment in Normal Individuals. Jour. Am. Osteo. Assn., 1936 (Jan.) 35:225-229.

it is possible that the benefits which result from such experience may be explained in this way." (pp. 156, 157)

It scarcely seems that the giving of a vaccine to induce fever in the belief that "its total effect is, in a sense, to wash out the tissues through the lymphatics," is the best procedure, when motion has been shown to be such an effective cause of lymph movement, and especially when the so-called "lymphatic pump" method of application of passive motion has proved itself clinically so efficacious.

The writers in question have observed the effects not only of all these factors we have mentioned, but also that of heat as a stimulus to the flow of lymph.

They comment on numerous experiments showing the effect of hyperemia on lymph flow and say: "From the evidence available it thus seems that at about 40 C. [104 F.] capillary dilatation begins. . . . McMaster and Hudack[15] showed that the permeability of lymph capillaries to dyes injected into them became greater when exposed to heat." (pp. 162, 163)

"As a region becomes inflamed, the blood capillaries dilate and undergo an increase in permeability which may readily be so great as to permit the outflow of blood plasma. There is an increase in tissue fluid and tissue pressure. An active flow of lymph is the result." (p. 166) The authors refer to experiments by a number of authorities bearing out this fact. (Lassar,[16] Jankowski,[17], Field, Drinker and White[18])

"From what has been said, it is clear that inflammatory changes, unless extraordinarily severe, tend in our opinion to promote lymph drainage." (pp. 168-169)

"It seems certain that heat and light increase what may be called extravascular circulation. That is, they produce conditions favorable to filtration from the blood capillaries, induce turgescence of the part, and a slight increase in lymph flow will result." (p. 163)

"Anything which induces capillary hyperemia will increase tissue fluid to a slight degree. This is true of the application of heat and ultraviolet light and of the intravenous injection of foreign protein, as for example typhoid vaccine. . . . Taken alone such agencies, applied as they must be in treatment, will increase lymph flow only slightly, but if they are combined with motion lymph flow will always be increased." (pp. 187-188)

In other words, at least in cases where the temperature is raised through the external application of heat, (and presumably when it is raised by any artificial means) lymph flow does not markedly increase until the temperature goes considerably above 40 C., but with the application of motion in addition to heat, lymph flow should be stimulated. If lymph flow is increased, tissue drainage is also increased. When tissue drainage is increased, the inflow of tissue fluid must take its place. This gives the tissue more food and oxygen, resulting in increased metabolism, and when infection is present, against which antibodies are being formed, it brings more of them to the scene of action.

Let us now consider the effects on the body of: (1) active or passive movement (which would include the so-called "lymphatic pump"); (2) increased temperature (which would include artificial fever); (3) a combination of activity and heat (which would include the combined artificial fever and "lymphatic pump").

It will be understood that not all of the statements to follow have been substantiated by sufficient experimental evidence. They are presented in the spirit of the article as a whole, which sets forth facts and hypotheses intended to stimulate thought and investigation.

Movement (as obtained by the so-called lymphatic pump), *(a)* increases lymph circulation (and all that this increase indicates); *(b)* supplies the body with more oxygen; *(c)* increases the white cell count; *(d)* increases the opsonic index; *(e)* increases the agglutinative power of blood serum; *(f)* increases its bacteriolytic power; *(g)* produces passive massage to the viscera—liver, spleen and pancreas—increasing the lymph flow through these vital organs; *(h)* this massage also stretches the fibrotic tissue in these organs, if they have undergone degeneration, the nonelastic fibers whose shrinkage dams back the flow of lymph to the cells which are functioning the best they can, though limited by the reduced flow of lymph; *(i)* usually produces a drainage of the gallbladder, frequently resulting in nausea, characteristic of this drainage; *(j)* mobilizes the lower ribs; *(k)* produces some motion between the spinal segments; *(l)* stretches adhesions in the abdomen, if present.

Increased temperature (either physiologically or artificially induced), *(a)* increases heart rate; *(b)* increases the minute volume of blood flow; *(c)* increases respiratory rate; *(d)* increases the demand for oxygen; *(e)* increases the white cell count; *(f)* increases metabolic rate; *(g)* causes capillary dilatation; *(h)* relaxes soft tissue; *(i)* stimulates the oxidation of the body's acids, toxins, or foreign antigens, so that the emunctories may remove them; *(j)* causes an increased output of CO_2; *(k)* causes an increased output of perspiration; *(l)* a few reports indicate that fever alone increases to a small or questionable amount the opsonic index and the bacteriolytic and agglutinative powers of the serum.

A combination of the "lymphatic pump" and artificial fever produces a result that is more than the sum of the two parts. A blacksmith with his hammer and anvil can eventually work cold iron. If he heats the iron he gets his results more easily, more quickly, more exactly, correctly and completely. The result is more than the sum of the results of the heat and the hammering. Likewise, the result of the combination of the "lymphatic pump" and fever treatment is more than a simple addition of the two. It includes a third result. This is not brought out in each individual item which follows, but it is true in general.

(a) The heat increases metabolism while the pump increases the flow of fluids and the resulting purification is more than the sum of the parts. *(b)* Heat lowers the resistance in capillary walls and tissues. The lowered resistance permits the fluids to be pumped through more readily. Both the heat and the mechanically increased rate of flow of fluid call for more

oxygen which is supplied as a result of the mechanically produced increased rate and depth of respiration, the proof of this being the slight dizziness often noticed in persons undergoing "lymph pump" treatment —a symptom of oxygen saturation. *(c)* The increased speed of circulation of body fluids tends to the absorption, and complete and equitable distribution, of the heat, tending toward a uniform temperature throughout the body, with its benefit. *(d)* The heat so relaxes the tissues that the stretching of fibrotic and other abnormal tissue, resulting from the movements of the "pump," may be of greater scope with less danger of trauma. *(e)* The heat stimulates an increased activity on the part of such poisons as are present in the body and the pump distributes them, resulting in increased antibody protection against the chronically present toxin. *(f)* The increase in the agglutinative and bacteriolytic powers of the serum, and in the opsonic index, are greater than with either therapy alone. Likewise, the end products of metabolism are more readily eliminated and the output of carbon dioxide is increased. *(g)* While it is not likely that the addition of the "lymphatic pump" to artificial fever treatment markedly increases the amount of perspiration, yet it is believed that the solid contents of the perspiration are increased.

In view of all the clinical results secured by osteopathic physicians in the past fifteen years, from the use of the so-called "lymphatic lump," and of the many facts brought out by experimental laboratory work, and reported in the book from which I have quoted at such length, it is urged that much further research be undertaken with the direct object of ascertaining as nearly as possible what our mechanical methods actually do. It is further urged that these investigations include the effects of the application of heat. In view of the observations recorded in my previous article, and which seem to be explained herein, it is hoped that many will immediately give their patients the benefit of the combined treatment, without waiting for a complete scientific explanation of the results.

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OSTEOPATHIC CARE OF TUBERCULOSIS

(Continued from page 327)

about the fundamental principles involved. If these are understood, each physician can figure out his own technic better than he can be told. Neither am I attempting to say, definitely, how much or how little pressure be used in springing the spine or in placing it in extension. To do this, the physician (to one light pressure may mean one pound, while to another it may mean ten), the type of patient, and the character and extent of the lung pathology, would all have to be taken into consideration, which renders it extremely unwise to try to generalize.

As a word of caution: The objections to the use of corrective procedures over a tuberculous chest lie in the possible dangers incident to the increase in mobility of the diseased lung and if, after all these things have been taken into consideration, the correction of the lesion is held advisable, our object and concern should be to accomplish this with the least undesirable effects.

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The Best Convention Yet

A greater number of osteopathic physicians than have ever assembled in one place will meet in New York City next July for the best osteopathic convention yet. Just as New York City, in 1923, set a record for attendance up to that time, so this year it will make another high mark.

There are many good reasons for this. New York attracts because of its size, because of its glamour, because of its prestige, because of its facilities for handling a big convention in a big way, and because of its entertainment possibilities.

This particular convention in New York attracts because Dr. Riley has organized a strictly high-grade osteopathic program. Each of the osteopathic colleges will present one outstanding aspect of osteopathy in an arresting way. It attracts because of the outstanding scientific exhibit which Dr. Dressler is organizing. Not only will there be splendid anatomical exhibits, instructive pathological displays and educational health material of many kinds, but also each college will show in the scientific exhibits something closely related to what its part of the program will be. The college which takes up the gastrointestinal system from the treatment standpoint on the scientific program, will illustrate its work in the scientific exhibits, likewise the college which covers nervous and mental diseases, and so on down the line.

Something of the general entertainment features has already been forecast in these pages, and it should be said also that the New York Women's Auxiliary is planning a continuous round of sight-seeing and other entertainment for the women in attendance.

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THE OPPOSITION ATTACKS AGAIN

"The renewed life and activity of the opposition has been whipped into a raging flame by the recent enactment of social security legislation, and I sincerely believe that the osteopathic profession stands in greater jeopardy than at any other time during its existence. For us, we can view the New Year as a myriad of hurdles."

This quotation is not from an alarmist, but from a level-headed leader in the osteopathic profession whose daily contacts fit him in an unusual way to know what dangers have beset us in the past, what problems we face today, and what the future seems to promise.

We are being assailed on many fronts and in vicious ways. For instance, Charles L. Farrell, M.D., addressed the Rhode Island Medical Society on September 5, on the subject, "The Doctor Looks at the Cults." His paper formed the leading article in the *Rhode Island Medical Journal* for January, 1936, and reprints are being distributed to the members of the legislature. He opens his arguments with a falsehood and builds well on that foundation.

But before he comes to the arguments he explains, by way of introduction: "I have never been sympathetic with the attitude of letting the public patronize the cults, if they so desire, and then let them find out later that they have been duped. I believe that it is the solemn duty of the medical profession to protect the people from charlatans and quackery and that the education of the people in the matters of health must be undertaken by us."

He says that in last year's session of the legislature a bill was "introduced by the osteopaths which removed any and all restrictions now placed on them. Let me quote from the bill: 'Section 10—a certificate to practice osteopathy confers upon the holder thereof the same rights and privileges and the same duties and obligations as a certificate to practice medicine,' etc."

As a matter of fact the part of H-712 which the doctor quoted was immediately followed by the words, "except the practice of major surgery." It is true that the bill did make provision for a surgical license after completion of certain additional work, but what the doctor said was that it would remove "any and all restrictions now placed on them."

In his next paragraph the doctor told how, in earlier days, watching the work of osteopathy, "the medical doctor, with his tongue in his cheek, recognized that the cult was supplying a mental peace to the inferior minds that needed a placebo."

Among these "inferior minds" was that of the late President Theodore Roosevelt. When the medical oligarchy kept Uncle Sam's fighting men from the benefits of osteopathy at the time of the Great war, Roosevelt wrote: "I am sorry that licensed osteopathic physicians who have passed the medical examining board examinations for commissions in the medical corps and have been recommended by the examining board for such commission have not received them. . . . I write on this subject with knowledge. Two of the members of my family have been treated with great profit to themselves for years by osteopathic physicians. One of these is now with our army in France. . . . I am genuinely concerned that he is unable to get [osteopathic treatment]."

Another of the "inferior minds" to which Dr. Farrell refers was that of the late Senator J. B. Foraker of Ohio. When he was in the United States Senate in April, 1900, the Physicians Municipal League of Cleveland wired him that he would be held responsible if the bill pending in the Ohio legislature became a law. He wired back: "I was not aware that such a bill . . . was pending. . . . If I had been advised I might possibly have helped to pass it, as I would have gladly done for the good of suffering humanity, who should somehow find relief, as I did for my son, from some dependence on such bigotry, impudence, and plantation manners as your telegram manifests."

One need not multiply examples of such "inferior minds" which have helped overcome the machinations of organized allopathy in the law-making bodies of the land. Going on this writer says: "I quote from notes made by an impartial investigator whose original report I have been privileged to read, Dr. Frederick Etherington. . . ." When he calls Etherington 'an impartial investigator," he shows the depths to which his misrepresentation will sink. In this connection, in order to show Etherington's state of mind, one need only reproduce a few sentences from the opening of Etherington's paper as it was given before the Federation of State Medical Boards in Chicago in February, 1935, and later published in *The Journal of the American Medical Association:*

"Talking of celebrated and successful irregular practisers in Physick, he said, 'Taylor was the most ignorant man I ever knew . . . Taylor was an instance how far impudence could carry ignorance.'—Samuel Johnson, 1779.

"I fear it may be thought a presumptuous procedure of 'carrying coals to Newcastle' for me to come from Canada to present a paper on the subject of 'Osteopathy and Licensure'; for osteopathy is the ill-formed child of lowly parentage—your child, not ours. . . ."

The man who would falsify concerning the provisions of the osteopathic bill introduced into the Rhode Island legislature last year and who would call Etherington "impartial," could not be trusted to choose material with any fairness, to quote correctly or to interpret honestly the rest of that paper which is being placed in the hands of leaders of thought in Rhode Island. The utter baselessness of his whole contention is proved when he says: "I have quoted extensively from Dr. Etherington's report because in no other way can I actually present incontrovertible facts. . . . In New England there are few, if any, informed enough to refute [the claims that osteopathic physicians study the same as we do, from the same textbooks, and are able to take the same examinations we take]." Osteopathic physicians have been practicing in the New England states for many years. There are osteopathic hospitals in New England. There is an osteopathic college as close as Philadelphia. Why cannot the facts be secured except from Canada? Why all the ignorance among the allopaths, as to actual education and suitability of osteopathic physicians? A chart, prepared with great care, published in THE FORUM OF OSTEOPATHY for December, 1935, shows that of the osteopathic physicians practicing in Rhode Island, 22 per cent had 140 weeks or less in professional college, 78 per cent had more than 140 weeks. Of the doctors of medicine in Rhode Island, the same chart shows that 39 per cent had 140 weeks or less and 51 per cent had above 140.

"Before osteopathic schools raised their standards . . ." says our critic, "the average student was of a very poor grade, consisting mostly of those whose educational training did not permit them to attend the medical schools." He trusts his readers to forget that the standards of allopathic schools at an earlier date were also much lower than they are now, and plenty of the same persons who entered one school could have entered the other. The high priest[1] of allopathic medicine in America has written: "There was a time when the standards of medical education in the United States was a matter for despair. Uneducated plow boys and section hands attended a few sessions of medical lectures and burst forth in the regalia of the physician. The medical schools were shambles." Osteopathic schools never were shambles.

What kind of doctors came from the drug schools of those days? Abraham Flexner has said: "Less than a half a century ago the office of an able urban practitioner consisted of two rooms, one for waiting and the other for consultation. There was little to indicate which was which beyond the ancient tilting haircloth examining chair, the wash-basin never empty, with its pitcher never clean, the roller towel renewed at long intervals, a few simple instruments which, used for all sorts of purposes were never boiled, two or three vials containing mercury or carbolic acid for local applications, and the mantelpiece strewn with proprietary preparations in dust-covered bottles. . . . The common neglect of hygienic precautions must have wrought untold damage, while inability to penetrate beneath the surface constantly forced the practitioner to guess or fumble." If this was the picture of "an able urban practitioner," what was the state of the average of the country? And why should our critic picture the doctor of osteopathy of other days in contrast with the allopath of today?

In all of this what reference does our critic make to points of real importance?

One obvious need of the nation is for good doctors. The best answer to the question, "who are the good doctors?" is found in the vital statistics. If the pneumonia patients, the influenza patients, the maternity patients of osteopathic physicians died in too many cases, the vital statistics would expose the fact. Nowhere in Rhode Island is there any such proof. That is the only reason such statistics are not used by the enemy.

Rhode Island is only one example. In Michigan the State Medical Society has been laying the ground for a basic science law. The chairman of their Legislative Committee and the secretary are quoted as saying that the income of osteopathic physicians is higher than that of the doctors of their own school, and that a basic science law would in time reduce the number of the former. They said: "Passage of this legislation can help the members of the profession to earn a more equitable compensation." These are unusually frank statements. Usually the medics—at least in their public sponsorship of such legislation—present it as "protection to the public."

Rhode Island and Michigan are mentioned only as examples of problems facing us in many states. Underlying it all there is the same attitude—an attempt to discredit a competitor, rather than an effort to find what is for the best interests of the public. When they suggest discussing the entire subject of osteopathy before a jury of men of scientific training, preferably biologists or anthropologists, they picture themselves as successful prosecutors of cringing criminals before a high tribunal. They never stop to think that if, and when, such an investigation is made it will not be a group of allopaths looking for flaws in osteopathy, but rather a body of scientists looking at the different schools of healing to see what good there is in each. In all their thought of "investigations" of osteopathy or "inspections" of its schools they forget that the purpose of such studies should be the discovery of the true in therapy and the best in education for the ultimate benefit of the public. Their ostentatious use of the term "nonsectarian" to designate their own school of practice does not for a moment hide their incompetence (because they are a sect) to render a fair verdict on the work or the institutions of any other school of practice.

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EXPERIMENTAL SURGERY VS. MANIPULATION

An eminent Boston surgeon has *re*discovered something. I say *re*discovered, because the fact was known to A. T. Still over sixty years ago. Just as Goldthwait[1] is given priority in most allopathic literature for observing that there is motion in the sacroiliac joint (an observation which Still had made and had taught to his early students, two of whom—McConnell[2] and Hazzard[3]—published the findings in 1899), so also it is possible that the name of Frank R. Ober[4] will be cited in future allopathic literature for his stumbling onto the mechanism of the fascia lata and its significance in the production of sciatica.

Dr. Ober has found that sciatic pain is definitely related to certain mechanical conditions of the iliotibial band and the fascia lata, and that disabilities of the sacroiliac and lumbosacral joints are involved in the syndrome. He has observed, in addition, that patients with contracted fasciae latae and iliotibial bands have other low-back difficulties, such as limitation of motion in the sacroiliac, lumbosacral, and lower lumbar spinal joints, spasm of the muscles of the buttocks and thighs, limitation of straight-leg raising, positive Ely's sign, and functional scoliosis if the contracture is unilateral. He even has noted that some patients complain of pain as far up the back as the lumbodorsal and cervicodorsal junctions.

In an effort to determine the cause of sciatica in those patients who exhibit no bone pathology of the spine roentgenologically, Dr. Ober turned his attention to the soft tissues, especially the muscles and fasciae intimately related to the sciatic nerve. The anatomy of the fascia lata interested him. He found that it was attached superiorly to the iliac crest, the sacrotuberous ligament, the ischium, the symphysis pubis, and the inguinal ligament. Inferiorly it gained attachment to the condyles of the tibia and the head of the fibula, and was continuous with the deep fascia of the leg.

He also observed that the greater part of the tendon of the gluteus maximus muscle is inserted into the iliotibial band (that thickened part of the fascia lata on the lateral side of the thigh) as is also the tensor fasciae latae. He explains that the origins of these two muscles—the gluteus maximus and the tensor fasciae latae—represents the base of a triangle whose apex is over the lateral aspect of the femur just below the trochanter and that "when there is a shortening of the iliotibial band and its fascial expansion, there is an abduction contracture of the femur, resulting in a tremendous leverage action on the sacroiliac and lumbosacral joints." This leverage action could account for the functional scoliosis in these low-back cases.

Now then, the sciatic nerve leaves the pelvis through the greater sciatic foramen, and emerges beneath the piriformis to be covered posteriorly by the gluteus maximus. Dr. Ober contends, and rightly so, that *any contracture of the fascia lata must exert muscular pressure on this nerve.* On the basis of this purely mechanical cause he proceeds to release the muscular pressure on the sciatic nerve simply by incising the iliotibial band and fascia lata.

Would Dr. Still have countenanced an operation of this type on any of his patients? Would he not have questioned Dr. Ober as to the cause of the abnormal contracture of the fascia lata in the first place? There is no explanation given by Dr. Ober in his article as to the cause. A little more study of the mechanics of the sacroiliac joint, a little more thought on the function of the psoas muscles, and a simple determination of leg lengths by means of a standing x-ray picture according to the technic of E. R. Hoskins, would have opened up to Dr. Ober a world of possible causes of fascia lata shortening and perhaps would have induced a hesitancy on his part in the too-ready use of the knife. Osteopathic physicians daily are relieving victims of sciatica by scientific manipulative treatment, without the use of anesthetics, sedatives, or the knife.

It would be to the advantage of osteopathy if one of its anatomists would tell the story of the fascia lata and its relationship to sciatica in the same clear, concise manner as the late R. R. Peckham told the story of the deep fascia of the shoulder region and its relationship to brachial neuritis.[5]

On February 10 memorial services were held for Drs. Peckham and Hoskins at the Chicago College of Osteopathy. Members of the faculty who had worked with these physicians told of their great contributions to the welfare of mankind and to the science of osteopathy. Even though the sphere of their influence has been small in comparison with the widely publicized works of investigators belonging to the so-called "old school," we do not hesitate to predict that in the future many of the scientific findings of these two men will be confirmed—no, *re*discovered—in some great "hall" of learning, perhaps by another Goldthwait or an Ober, whose connections with organized medicine give unexcelled facilities for public announcement and ballyhoo.

R. E. D.

OSTEOPATHIC RESEARCH IMPERATIVE—III.

In the research work so desperately needing to be done by osteopathic individuals as well as osteopathic institutions, negative findings are as important as those of a positive nature. As was stated last month, failures need to be reported just as much as do successes.

Two articles appear in this number of THE JOURNAL, the writers of both of which urge their readers to intensive clinical study. In both articles

1. Goldthwait, Joel E., and Osgood, Robert B.: A Consideration of the Pelvic Articulations from an Anatomical, Pathological, and Clinical Standpoint. Boston Med. and Surg. Jour., May 25, 1905, and June 2, 1905.
2. McConnell, Carl P.: The Practice of Osteopathy. W. B. Conkey Company, Chicago, 1899, (p. 43).
3. Hazzard, Charles: Principles of Osteopathy. Ed. 3. The Journal Printing Company, Kirksville, Mo., 1899 (p. 188).
4. Ober, Frank R.: The Role of the Iliotibial Band and Fascia Lata as a Factor in the Causation of Low-Back Disabilities and Sciatica. Jour. Bone and Joint Surg., 1936 (Jan.) 18:105-110. Abstracted in the Current Medical Literature department, p. 354, this issue of THE JOURNAL.
5. Peckham, R. R.: The Anatomy Involved in Brachial Neuritis. Part I, Jour. Am. Osteo. Assn., 1927 (June) 26:829-824; Part II (July) 26:903-906.

there are many citations to, or extensive quotations from, literature reporting scientific research. To refer again to last month's editorial: "It is well to read . . . journals and books . . . but after all, the living bodies of our patients are the most fascinating textbooks, and there are more truths hidden away in them than has been dreamt of in our philosophy."

Charlotte Weaver in this JOURNAL begins a series of articles presenting a belief which the orthodox tell us was disproved decades ago. But it must be remembered that osteopathy includes many things which were put forward long ago and either discarded and forgotten, or apparently "disproved" time after time by supposed authorities.

George A. Still[1] was right when he objected to "doing over and over, experiments in physiology and surgery which are ages old and which have already been excellently done, and calling it research." On the other hand it is entirely in order to present new material or new explanations of known facts and to undertake advanced work on such a basis. In such case, as in any other, negative results should be as carefully and honestly presented as positive results would be.

Dr. Hammond presents in this JOURNAL an article of a vastly different type. It undertakes to explain the clinical results of the so-called "lymphatic pump," which has been used under that name for fifteen or sixteen years and some elements of which have been employed by osteopathic physicians for much longer. It seems also to give reason for the much more recent undertaking of combining such treatment with the application of artificial fever. This article also opens up a great field for study and again a field where negative findings as well as positive are valuable.

Let us refer again to the editorial in the January JOURNAL, where the importance of standing x-ray pictures is stressed. In that connection Wallace M. Pearson[2] of Kansas City College states that in thin individuals suffering from ptosis, "Routine treatment with the establishment of motion, is most ineffective and probably harmful, because one half the applied treatment will undo the worth-while half." Dr. Pearson does not decry all treatment, but only "routine" treatment, and that not carefully thought out. Self-deprecatingly, he says that the work so far done under his direction in the Kansas City college clinic in the way of standing x-ray studies is not worthy of the name "research." But at least it is laying the foundation for something very much worth-while, where again negative findings will be just as valuable as positive.

In this series of editorials there has already been stressed the importance of individual osteopathic physicians keeping alert minds to record and understand what is done, why it is done, and the results observed. It has already been said that if even 1 per cent of the members of the profession would set themselves each to study one particular problem, the results in a very few years would be beyond the range of our present imagination.

We are not forgetting the importance of correlating the results of such individual study. Della B. Caldwell[2] has recently said:

"Many fine things are lost to our profession that have originated with practitioners who either did not realize their importance or did not have the ability to get them across to the profession, or perhaps did not have the means to do so.

"What I would like to see is a clearing house composed of competent members, open-minded people, who would investigate and evaluate these things. When they are of value, we should find a way to incorporate them in the osteopathic armamentarium. To illustrate—the technic used by William G. Sutherland to move the bones of the skull has great value not only for headaches but also for the effect this treatment may possibly have on the pituitary gland, and through it on the whole chain of ductless glands.

"There are countless other valuable osteopathic things around this country needing to be adopted into our osteopathic family and put to work. I strongly feel that we have given too much time and thought to the sinking ship of internal medication. Not a thing of value in advancing osteopathy will ever come from its musty, decaying hull. Instead let us have this clearing house of scientific investigation, evaluation, and development of all these different thoughts and investigations in unexplored fields that are rightfully ours."

The Bureau of Professional Development of the American Osteopathic Association does undertake to function as such a clearing house. It has investigated a number of things and it is still engaged in such investigations. THE JOURNAL also hopes to serve the profession in this regard by publishing articles such as the two already mentioned which appear in this number. It is not to be expected that THE JOURNAL can accept and undertake to popularize every belief that is put forward. It must make the distinction already suggested between investigating things which have been tested over and over—which have been conclusively and scientifically disproved—on the one hand, and on the other those things which seem to be in line with known facts or at least not too much opposed to such facts.

If the rank and file of the profession—if even 1 per cent of us—would devote ourselves individually, each to a problem of his choice, and study these problems as they should be studied, the advance the profession will make will be stupendous and there will be such a demand for a clearing house of ideas that we will have to create, for the purpose, a group of workers who will have time for nothing else.

It will be interesting to know what members of the profession are undertaking such study and what line each is following. It will be of interest also to receive suggestions for other lines of study, from individuals who cannot themselves undertake such work.

R. C. Mc. AND R. G. H.

1. Still, George A.: Research or Real Estate. Jour. Osteo., 1914 (Mar.) 21:193-200.
2. Personal Communication.

THE CRANIAL VERTEBRAE

There is presented in this number of THE JOURNAL the first of a series of articles by Charlotte Weaver, D.O., alienist. On July 20, 1935, in Cleveland, Ohio, Dr. Weaver presented the thesis of her research into "Certain Heretofore Unexplored Functions of the Central Nervous System," before the Board of Trustees of the American Osteopathic Association and certain other members of the osteopathic profession who were invited by the members of the Board of Trustees to hear the presentation.

The complete thesis as there presented necessitated long and careful attention. It gives in lengthy technical form and meticulous detail the net results of the original research which Dr. Weaver has carried on alone and privately for a quarter of a century.

The research was inspired by certain statements concerning central nervous function, which were made to Dr. Weaver personally by Andrew Taylor Still on several occasions during the later period of his life.

The complete thesis is scheduled to appear in book form at some time during the next eighteen months. In the meantime Dr. Weaver has been persuaded to release to THE JOURNAL a series of articles on certain of her findings in practical applied osteopathic therapy which the research has established to her own satisfaction.

This first group of articles is entitled, "The Cranial Vertebrae," and in it Dr. Weaver brings voluminous proofs and arguments concerning the existence of such structures. This material, as well as that to follow, dealing with other phases of her research, is likely to give rise to much dispute.

It has been quite generally held that there is no such segmentation, no such interosseous movement, and therefore no possibility of the occurrence of such osteopathic joint lesions in the cranium, or their relief, as Dr. Weaver claims. Her critics will point to Cunningham, to Gray, and to Arey to disprove the cranial segmentation theory. They will say that the theory of cranial vertebrae had its inception in the eighteenth century, before the development of the science of embryology. They will say that the phylogeny and ontogeny of vertebrates has demonstrated quite clearly that the development of the cranium differs absolutely from that of the spinal region.

They will say that Huxley has thoroughly refuted the theory from both the anatomical and the embryological standpoints.

We are looking for the truth. As is pointed out in another editorial in this number of THE JOURNAL, plenty of research is ripe for the doing. True research work is undertaken without preconceived notions of what the results will show. Arguments in abundance have been published in many textbooks, which tend to show that the three cranial vertebrae about which Dr. Weaver writes do not exist. It will be interesting to see whether they will prove more convincing and more permanent than what the books used to contain about the sacroiliac articulation, before osteopathic clinical results and research made them change.

MORE MEDICAL CENSORSHIP

Advertising Age reports an address by Morris Fishbein, M.D., editor of *The Journal of the A.M.A.*, before the Chicago Women's Advertising Club on January 21, in which he said that when the new building of the A.M.A. is completed, the work of the Committee on Foods will be greatly expanded and enlarged and he predicted the formation, in the near future, of a committee on cosmetics to examine products in that field and to permit manufacturers of approved products to use the seal of the committee as is done in the food field.

The speaker emphasized the fact that since not only the products themselves, but also claims made for them in advertising and sales literature, are considered by the Committee on Foods, it has been able to influence advertising copy to a marked extent. Advertisers who are permitted to use the seal of the Committee on Foods are required to submit their new advertising material to the committee before its publication, and hence any new claims they make are constantly checked.

In commenting on the Pure Food and Drugs Bills before Congress, Dr. Fishbein said: "It seems to me that any activity such as advertising, which should appreciate the value of freedom of movement, without hindrance or government regulation, would appreciate its position so greatly as to set up effective measures for self-regulation, and thus avoid, in large measure, the disadvantages of government control." It does not appear whether he considers the censorship of the Committee on Foods as "an effective measure for self-regulation" of a nature to obviate "the disadvantages of government control."

CHANGES OF FRONT

Medical education, medical licensure, and medical legislation are holding their own along with medical economics, in the minds of the doctors, the activities of their conventions, and the contents of their periodicals.

Nor is everything characterized by smooth sailing. The Council on Medical Education and Hospitals of the American Medical Association met in Denver last September and voted to remove from its list of approved schools of medicine, on and after July 1, 1938, all those offering only the first two years of the medical course.

The Association of American Medical Colleges meeting in Toronto in October, adopted, without a dissenting vote, a resolution requesting the Council to reconsider its action and to classify such schools individually on their respective merits. The Council, meeting in December, rescinded its September action and voted to proceed as requested by the Association of American Medical Colleges.

At that September meeting, as was mentioned in these columns last month, the Council resolved that after July 1, 1938, it would no longer carry on its approved list, schools of sectarian medicine. The board of trustees of the American Institute of Homeopathy expressed its sentiments in *The Journal* of that organization for January, 1936. They denied the right of any organization to tell them what the names of their schools should be and termed as impertinent the attempt, on the part of anyone, to dictate what they should teach. However, it seems that action has been taken to eliminate the word "homeopathic" from the name of the one college on the approved list of the A.M.A. which contained it, so that henceforth neither one of the two approved homeopathic schools will show by its name that it is "sectarian."

These questions were among the many vigorously discussed at the February meeting of the Federation of State Medical Boards and the other groups which meet with it in Chicago every year. Osteopathic members attending the meeting wondered as to the significance of the apparent change in attitude of the speakers this year as compared with last. The notorious Etherington and those who backed him up were an outstanding example of an attitude that seemed quite pronounced in 1935—the tendency to slur and to slam and to malign and to attack osteopathy on every pretext presenting itself. In 1936 the word "osteopathy" was seldom used.

LET'S TELL THE WORKERS

A short time ago during the course of correspondence, an osteopathic physician living in a town surrounded by oil fields wrote:

> Yes, the oil field workers do have lots of low back trouble. The back work I do is done on the pocketbook of the worker. . . . They [the employers] will not send them to us.

This physician touches here upon a point of great importance to the osteopathic profession. This point is that workers who know about the value of specific osteopathic adjustment for back injuries will have this treatment and pay for it themselves rather than run the risk of long-continued disability, suspicion of malingering, etc., that go along with the treatment commonly provided by the insurance carrier which costs them nothing.

It is my belief that if all workers were informed thoroughly on this subject, they would have our treatment as a matter of course. They would not have to pay for it themselves. They would not even have to demand it in any kind of concerted way. They could get it individually in most cases simply by asking for it. To believe otherwise is to believe that the employers of the country who quite generally are users of osteopathy for themselves and their families refuse it to their employes from motives of bias and prejudice.

All leaders of organized labor approached on the subject of telling the worker about specific adjustment for this crippling and painful injury have been friendly toward an effort of this kind on our part. One of these, a district president of an organization affiliated with the American Federation of Labor has offered to distribute printed matter himself to the local unions in his district if it was furnished him.

The osteopathic profession has a monopoly on the proper treatment for the back injuries of industry. We owe it to the workers to tell them about it.

E. P. Malone.

A PAST PRESIDENT DIES

In the passing of D. L. Clark on February 20, the osteopathic profession suffers the loss of a unique character.

Dr. Clark was always a pioneer. He entered osteopathy, as so many of the early disciples did, because Dr. Still brought him relief when other methods of treatment failed to remove the effects of an injury.

Graduated in 1898, he is said to have been the first osteopathic physician in Texas where he carried on a campaign for legislative recognition to such good effect that when, in 1905, he located in Colorado, he was drafted into the legislative campaign in that state. For ten years, until the present practice act was passed, he served on the legislative committee.

He was appointed to membership on the state medical board and was reappointed time after time to terms of six years each. Twice he was chosen president of that board, which was made up largely of M.D.'s. He had a very important part in laying the groundwork for the meeting held in Chicago in 1923 for the purpose of arranging for an impartial scientific investigation of all schools of healing.

He was a charter member of the American Osteopathic Association and its second Treasurer. Later, he served with honor as a Trustee, Bureau Chairman, Vice President, and President.

It was not only in legislation, in licensure and regulation, and in organization that Dr. Clark was outstanding, but also in his professional work. In his treatment of the spine and pelvis, he had few peers, and patients came from many hundreds of miles to undergo the specific adjustments he gave. He was one of the early doctors of osteopathy who recognized the importance of the adjustment of the feet.

He was a neighbor and a friend. He was never too busy when the day came for his work with a choir of underprivileged boys.

Never a writer, never pushing himself forward on convention programs, he went on his quiet way doing his osteopathic work, counseling and guiding his fellow physicians, jealously striving for the best good of his profession. He was among the first twenty or twenty-five doctors to receive a Distinguished Service Certificate, his being conferred "for service in organization and legislation."

Fortieth A.O.A. Convention in New York City—July 20 to 24

Shape Plans for Outstanding Diagnostic Clinic

One of the most interesting and important features of the collateral program connected with the Fortieth Annual Convention of the American Osteopathic Association, which will be held in New York City next July, will be the diagnostic clinic. Every osteopathic physician who attended the convention held in Cleveland last year will remember the enthusiasm with which this clinic was received. So successful was it as a convention feature that its continuance is a natural certainty, and careful thought is being given to the plans by means of which the importance of the clinic, particularly to the profession, will be enhanced at the approaching convention.

Stanley G. Bandeen, Louisville, Ky., has been appointed director of the diagnostic clinic. From advance information it appears that Dr. Bandeen has arranged that much the same methods followed in Cleveland last July will be followed this year. That means that there will be examined patients referred to the clinic by physicians from all over the country as well, of course, as from New York City and nearby communities. Opportunity will thus be offered to the members of the osteopathic profession to have the best possible diagnostic service, particularly for problem cases.

It will be easy to realize the value of this opportunity to present a case for examination and opinion by outstanding physicians who will be in attendance at the convention in the Waldorf-Astoria Hotel, representing every section of the osteopathic world.

Close cooperation between Eugene R. Kraus, Chairman of Facilities, and Roland S. Coryell, Chairman of Clinics, with Dr. Bandeen assures the successful outcome of this tremendously important feature of the convention. To make certain the best execution of the plan Dr. Coryell has submitted an announcement, presented herewith, which announcement is earnestly called to the attention of every osteopathic physician who may at this time or when the convention approaches have before him a problem case. July is actually near at hand. Time is so short that physicians are urged to act promptly upon the information given and request made by Dr. Coryell in this issue.

DIAGNOSTIC CLINIC
of the
FORTIETH ANNUAL CONVENTION
AMERICAN OSTEOPATHIC ASSOCIATION.

An opportunity is offered for complete diagnostic service for physicians, their families or their patients, at the Annual Convention at the Waldorf-Astoria Hotel in New York City.

The examiners are outstanding physicians of the profession. There will be a nominal registration fee.

Fill out the registration blank below, and mail to Chairman of Clinics, Dr. Roland S. Coryell, 795 Ocean Avenue, Brooklyn, N. Y. A case history blank will be returned to you with instructions. Additional registration and case history blanks may be had on request. Patients will not be accepted after July 1, 1936.

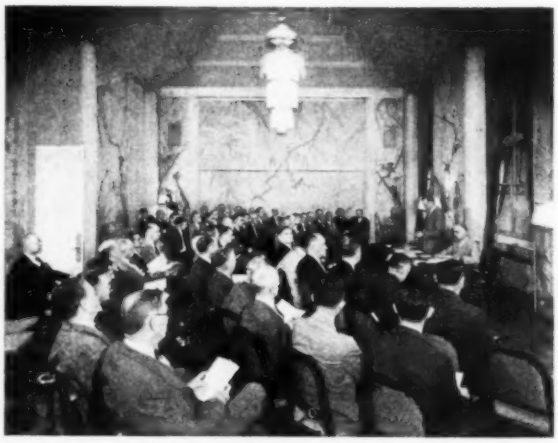
Name .....

Address .....

Referred by Dr. .....

Address .....

Section referred to.....



Typical Section Room—Waldorf-Astoria Hotel

Department of Professional Affairs

C. H. MORRIS
Chairman
Chicago

COMMITTEE ON SPECIAL MEMBERSHIP EFFORT

F. A. GORDON
Chairman
Marshalltown, Iowa

MEMBERSHIP STATUS

Osteopathic physicians everywhere are recognizing the strength of association. Related organization units are entitled to cooperative understanding extended a personal friend. Do we there expect perfection? We ourselves are less than perfect! As vision expands to a comprehensive understanding of related problems, we find in organization new reserves and resources. They are there because interested members helped to put them there.

For three consecutive years the Kansas City College of Osteopathy and Surgery has maintained organization leadership among our colleges with 100 per cent A.O.A. membership on the part of the student body and faculty.

We have reached the time in this fiscal year when the By-Laws provide that applications for membership accompanied with dues payment in full for one year will be granted free service for the three remaining months of the fiscal year. Reference to the nonmember list in the new directory will remind interested members to tell their colleagues so listed of the advantage of membership at this time. A.O.A. members in states leading their groups here listed have repeatedly assisted their delegate representatives in this way.

This recapitulation of February 1, like previous charts, is based upon the membership status of August 1 of this fiscal year. It indicates a total net gain of 3.84 per cent as compared with that date. [THE JOURNAL last month erroneously published the membership gain for the five month period ending January 1 as 18 per cent. This was not Dr. Gordon's error.—Editor.] The total net gain of 3.84 per cent is only properly appreciated when we recall that records of August 1 contained many delinquents who have since been dropped. Net gains are now recorded in 36 groups, par findings obtain in 15, while loss is confined

to 10 groups. Group A includes all societies known to have a potential membership of 200 or more; Group B, those from 100-199; Group C, those from 50-99; Group D, those with less than 50.

MEMBERSHIP CHANGES SINCE AUGUST

Group A (Societies of 200 or more)	Jan. 1	Feb. 1
Iowa	11.8%	12.5%
California	9.8	12.2
New Jersey	5.9	8.
Michigan	3.9	6.8
New York	1.9	4.2
Missouri	.6	3.9
Illinois	1.1	1.9
Ohio		.9

Group B (Societies of 100-199)	Jan. 1	Feb. 1
Maine	13.3%	12. %
Wisconsin	9.2	10.5
Florida	11.	9.7
Minnesota	5.3	8.
Indiana	2.9	2.9
Colorado		1.3

Group C (Societies of 50-99)	Jan. 1	Feb. 1
Georgia	30.6%	36. %
Kentucky	35.	30.
England	12.	12.
South Dakota	2.9	5.8
Rhode Island	6.2	4.1
Oregon		3.3

Group D (Societies of less than 50)	Jan. 1	Feb. 1
Manitoba	200. %	300. %
New Brnswk.	100.	100.
Phil. Islands	100.	100.
Louisiana	71.	85.
Hawaii	40.	60.
New Mexico	26.3	36.7
Alabama	33.3	33.3
Nevada	33.3	33.3
Saskatchewan	33.3	33.3
Quebec	25.	25.
British Colum.	14.2	16.6
So. Carolina		16.6
New Hamp.	6.6	13.3
North Dakota		11.
Virginia		6.6
Other Countries	4.	4.

F. A. G.

BUREAU OF PROFESSIONAL DEVELOPMENT

ARTHUR E. ALLEN
Chairman
Minneapolis

COMMITTEE REPORT ON THE WORK OF CHARLOTTE WEAVER

During the national convention of the American Osteopathic Association at Cleveland last year, Charlotte Weaver, Akron, Ohio, presented results of her research work on evidence of the existence of a movable articulation between the basisphenoid and the basiocciput. Dr. Weaver stated that disturbances of relationships of bones entering into the articulations at the base of the skull were important factors in the cause of certain types of disease.

A committee, consisting of George S. Rothmeyer, R. N. MacBain, and myself as chairman, was appointed to investigate her work further. As Dr. Weaver had not arranged her findings in written form at that time, it was considered best that a subcommittee be appointed with Dr. MacBain as chairman. This subcommittee, members of the faculty of the Chicago College of Osteopathy, consisted of W. Fraser Strachan, of the department of anatomy, C. Gorham Beckwith, of the department of roentgenology, Charles C. Scott, A.B., of the department of physiology, and A. Tannenbaum, B. S., M.D., of the department of pathology. In addition to the members of the subcommittee, R. C. McCaughan and Ray G. Hulburt of the Central office, S. V. Robuck and K. R. M. Thompson were in attendance for the hearings which were held on November 4 and 5, 1935. Space does not permit for a complete report of the subcommittee. Following is the summary:

"In summarizing Dr. Weaver's presentation, we would like to say that the committee feels that Dr. Weaver's work merits all the support which the osteopathic profession can give her to further her investigations. We do not believe that it is possible for any group in the profession to pass on the value of Dr. Weaver's work at the present time. The ultimate acceptance or rejection of the existence of basilar cranial lesions, the extent of their influence on the physiology of the body, and their amenability to manipulative therapy, can be determined only by *first*, further anatomical research, including studies by the x-ray, by dissections, and by post-mortems; *second*, by an extensive and carefully checked clinical study supervised by Dr. Weaver and any individuals she may choose to assist her; *third*, by the tabulation of the details by Dr. Weaver and a presentation in manuscript form of her conception of the application of osteopathic principles to this particular region of the body, with references; and *fourth*, by the training of carefully chosen and interested members of the profession by Dr. Weaver in her methods of diagnosis and treatment."

ARTHUR E. ALLEN, Chairman.

BUREAU OF PROFESSIONAL EDUCATION AND COLLEGES

JOHN E. ROGERS
Chairman
Oshkosh, Wis.

OSTEOPATHIC EDUCATION—PRESENT AND FUTURE

The Board of Directors of the Philadelphia College of Osteopathy voted on December 18, 1935: "That the Philadelphia College of Osteopathy shall require two years of college work for admission hereafter." Announcement of this action was made by Dean Holden at a meeting of the faculty on January 14, 1936, as reported in this column last month.

The address of Dr. Holden on that occasion appears in the January number of *Osteopathic Digest*. He pointed out that one of the aims of the Philadelphia College for many years has been to maintain a position of recognized standing among professional schools by maintaining accepted educational standards. "The standards set for and identified with the professions," he said, "as law, dentistry, fine arts, medicine, and the like, are looked upon as the standards that should be accepted for the osteopathic profession."

He went on to say that an important item to be taken into consideration, when contemplating an increased preliminary standard, is the ability of the institution to effect a balance of its budget during the initial period of operation of the new ruling, since a falling off in numbers of matriculants is to be expected. The Board of Directors believe that at this time there is a greater need for approved educational standards than for gained numbers of students to keep the coffers replenished.

A certain specified amount of preosteopathic study cannot constitute the ultimate in determining the suitability for entrance of osteopathic students. It is generally conceded that the selection of students might better be governed by consideration of the qualifications of each individual to pursue the study of osteopathy, and should not be too sharply restricted by requirements which may, or may not, be essential. Determination of the preosteopathic requirements should be left to the individual schools. A sound, general training is conceived to be of more value as a preparation than a more limited, arbitrary curriculum.

Both New York and New Jersey, Dr. Holden pointed out, will require two years of college work, beginning this fall. In New York the rule applies not only to the individual seeking examination, but demands that the college require the same of all students entering. New Jersey also calls for the completion of a one year internship in an approved hospital. The Philadelphia Osteopathic Hospital has already been officially inspected and approved for internship by the New Jersey State Board of Medical Examiners.

The first restriction to obtain for the future, Dr. Holden explained, is that the size of classes must be limited to a number compatible with the teaching strength, not on a basis of mass education, or upon resourcefulness, ingenuity, or improvisation to effect ends. It is the purpose to adjust the time and the pace of the curriculum to the superior students. The unfit are to be dropped out because it is not good for them nor for the college nor for the profession to have them continue. By requiring evidences of achievement and promise from our students, by setting the intellectual level of the class rather than letting the weaker students

control the pace, we will have done much toward the ultimate refining and perfecting of our product.

The ideal curriculum which Dean Holden held up is one "devised to afford a sound grasp of the fundamental abstracts of osteopathy and a rounded preparation for osteopathic practice." There can be but small place for dogma in such an undertaking, he said. Osteopathy is not an isolated field but an integral part of scientific knowledge and must be correlated with the other major divisions of learning.

We have but made an impressive beginning in correlating the sciences with osteopathy and with clinical osteopathy in the upper-class years. Along with orderly, systematic, platform, section, bedside, and clinical instruction in osteopathic technic, a greater impetus to our basic osteopathic tenets and procedures has been realized than ever before. The student must be provided with an understanding and insight into the mechanisms and the functional changes in disease processes and with a direct personal experience at the bedside, in the clinic, and in the laboratories. There is no substitute for the master clinician in the clinical fields of instruction.

Dr. Holden emphasized the great need for the opportunity for graduates to pursue advanced work. He said: "The need for postgraduate courses, for expanded internships, the creation of fellowships and opportunities for productive research were duly recognized a few years ago and at this stage we are able to point to remarkable developments."

The necessity for research and for scientific proof was emphasized by Dr. Holden. He pointed out that our organization must equip itself to maintain its scientific self-respect. A ceaseless activity in terms of actual initiations and engagements must be the order of the day. The very word "research" has been desecrated and burned out in its hopeless employment to stress the need for action. Expanded quarters, augmented man-power and increased budget allotment to this important field would pay high dividends in every way. With returning prosperity, philanthropies will be reborn and calls will be made as soon as possible for one and all to support worthy enterprises. It will be well for osteopathic interests to be early in the game of fund solicitations. The Philadelphia College is in need of added bed capacity, increased clinical facilities, a research building, postgraduate facilities, enlarged museums, redoubled libraries, endowed teaching chairs, endowed beds, established fellowships, student loan funds, and the like.

Dr. Holden pointed out that the college is now thirty-six years old and he suggested a fourteen year program looking to the completion of its terms and a realization of its purposes by the time of the fiftieth anniversary of the founding of the college.

A. T. STILL OSTEOPATHIC FOUNDATION AND RESEARCH INSTITUTE

JOHN E. ROGERS
President
Oshkosh, Wis.

R. E. BECKER
Managing Director
Chicago

OSTEOPATHIC FILMS AND SPEAKERS AVAILABLE

The home office of the A. T. Still Osteopathic Foundation and Research Institute has received in the last few days the three films made by Ralph W. Rice and his co-workers, and is ready to book them for osteopathic meetings. These films are: "Osteopathic Mechanics of the Dorsal Area," "A Study of Sacroiliac Technic," and "The Results of Stimulation and Inhibition on the Digestive Tract of Normal Animals." The first film had its initial showing at the Cleveland convention last year, the second at the Vermont annual meeting in 1932, and the third at the Seattle convention in 1931. All of them have been extensively booked and have met the approval of the profession. These pictures are educational and thought-provoking. They offer a sample of what could be done in visual education if the proper means were at hand.

The charges for these films are one dollar ($1.00) a reel, which does not include transportation costs. The first film named is 2 reels in length, the second 3 reels, and the last 1 reel. The transportation costs may be estimated on the basis of a weight of approximately two pounds to the reel. The first and last films named take about thirty minutes to run and the second about forty-five to fifty minutes. The divisional societies and other groups are cordially invited to make use of these pictures. You will be assured of a good evening's program.

Another service the Foundation and Research Institute is ready to offer is the availability of members of its organization as speakers for lay and professional groups, particularly to meetings of divisional societies. Among these members are John E. Rogers, Oshkosh, Wis., President of the organization; S. V. Robuck, Chicago, a member of long standing in both the former Research Institute and the Foundation; Edward S. Merrill, Los Angeles, a well-known writer and lecturer; Carl P. McConnell, Clear Creek, California, research worker and writer; and R. E. Becker, Chicago, Managing Director of the organization.

The activities of the Foundation and Research Institute are such that in order to keep abreast with the developments of the organization, these men and others of the group have been placed at your disposal. There are several programs now under consideration, one of which we hope to announce in the next number of THE JOURNAL. Definite services to the profession are planned and will be made available as rapidly as their plans can be matured.

For further information regarding either the films or the lecture group, send your inquiries to R. E. Becker, D.O., Managing Director, 430 North Michigan Avenue, Chicago.

R. E. B.

National Board of Examiners for Osteopathic Physicians and Surgeons

CHARLES HAZZARD
President
New York

EXAMINATIONS IN PART I HELD

The first examination by the National Board of Examiners for Osteopathic Physicians and Surgeons was held in the various osteopathic colleges on Tuesday and Wednesday, February 4 and 5, 1936. This examination constituted Part I of a scheduled three parts for thorough testing of applicants for a certificate from this Board. Part II of the examinations will be given before the end of the school year.

JOHN E. ROGERS, Chairman.
Committee on Examinations.

Ownership of Roentgenograms

The position of the roentgenologist in regard to the question of ownership of the films or plates has come up for more or less discussion for many years, and until quite recently has never been decided by any court of record. . . .

Recently, however, two decisions by Michigan courts seem to put the ownership clearly in the roentgenologist where it rightfully belongs. All the negatives, plates, films, prints, etc., are as much a part of the records of the case as are the history sheets, and as such they are the property of the physician, hospital, laboratory, or clinical group that caused them to be made. . . . To fortify the roentgenologist's position in this particular, it is only necessary that he have all his billheads and statements read "roentgen examination" instead of "films," "plates," or "pictures." If that be done, he has the evidence that the examination was what was charged for and naturally the records should remain in the hands of the maker of them, just as does the record of blood counts, etc.—*Current Legal Thought*, October, 1935.

Department of Public Affairs

E. A. WARD
Chairman
Saginaw, Mich.

BUREAU OF INDUSTRIAL AND INSTITUTIONAL SERVICE

WILLIAM O. KINGSBURY
Chairman
New York

J. J. McCORMACK
Vice Chairman
Sheboygan, Wis.

STATISTICS PROVE LOW COST OF OSTEOPATHIC CARE

Albert W. Bailey has given us some very valuable and interesting information in his articles on industrial accident statistics in the January and February issues of THE JOURNAL. This Bureau is particularly thankful for these statistics and accompanying suggestions because their accuracy and authority cannot be doubted.

In New York only cases of seven days or more disability become open cases and later closed with an award by the Department of Labor. The figures of Dr. Bailey include only cases of this type. They do not take into consideration the thousands of cases of less than seven days disability, for which the insurance companies pay only the physician's fee. If any large insurance company were to prepare statistics from its records, all cases would be included—the inexpensive as well as the costly ones—and the average period of disability and average cost would be lower than the figures given by the Department of Labor of New York.

Dr. Bailey makes a significant statement in the February issue of THE JOURNAL as follows:

"High officials of some of our largest insurance companies have not hesitated to state to me that too many osteopathic physicians are too willing to exaggerate the great saving that osteopathic treatment will make in the care of compensation cases without at the same time showing, by acceptable statistics, that what is claimed in isolated or picked cases would be true of the general run of industrial disabilities."

In a brief preliminary study of 497 cases of low back strain thus far reported to this Bureau, approximately 43 per cent have no time loss to the worker. These cases would not be classed as "open" cases by industrial accident commissions, but would be included in statistics prepared by insurance companies, as the insurance companies have paid the physicians' fees.

It is evident why some osteopathic physicians are enthusiastic about the low cost of osteopathic care of industrial accident cases, especially those of back strain. Their enthusiasm seems to be justified by a study of insurance cases reported to this Bureau, with 43 per cent of low back injury cases having no time loss, and 30 per cent having 5 days or less disability, making a total of 73 per cent with no loss of time and less than 6 days disability. These figures do not include a large number of low back cases in which the time loss was not reported.

According to Dr. Bailey's article, cases of less than 7 days disability would be considered as picked cases by most insurance officials. One naturally wonders how many cases that are now classed as "open" cases by commissions with several weeks disability, would fall into that first class of "picked" cases with less than 7 days time loss if they had been referred to osteopathic physicians when the accident occurred. I am positive the number would be startling.

It is inconceivable to me that 30,000 cases of back strain in five years should have an average disability period of eleven weeks, almost three months. This is contrary to my own experience of 23 years in handling industrial accident cases of this type, and to the experience of every other osteopathic physician who accepts compensation work. Consider the unnecessary loss to the worker in wages and time, not to mention the needless suffering and possible permanent disability! Think of the increased cost to the employer in larger premiums to carry this unnecessary additional expense!

Can we change this situation? I believe we can. With the cooperation of every osteopathic physician and with the aid and advice of men in key positions, like Dr. Bailey, much progress can be made in educating labor, the employers, and insurance officials. This will reflect eventually in increased industrial practice for the osteopathic profession.

Fellow osteopathic physicians: Does anything more need to be said to induce you to report your cases of industrial accidents? When we have tens of thousands of case reports, we can present statistics that are acceptable and convincing. We can talk with confidence of our ability to take care of those cases which respond well to osteopathic treatment. You will be performing a distinct service; while helping others you will at the same time be helping yourself. A postal card request to me for case report blanks will be taken care of promptly. (See Editorial Note below.)

J. J. McC.

THE QUESTION OF MALINGERING

E. P. MALONE, D.O.
Miami, Okla.

Recently I had an opportunity to talk briefly with the chairman of a state industrial commission. I introduced myself as an osteopathic physician who had had some experience with the back injuries of industry. At once he asked me this significant question: "How would you tell whether a man claiming a back injury was malingering or not?"

This man is constantly presiding at hearings on industrial accident cases, a large percentage of which are concerned with injuries of the lower back. I am sure that what is uppermost in his mind, and in the minds of all other commissioners as they listen to the evidence in these cases and pass judgment upon them, is whether or not fraud is being attempted. Does the claimant actually have a back injury or is he a malingerer?

This question is justified by experience. It is not strange that the commissioner, hearing case after case of this kind in which the physician who examined and treated the case testifies in the interest of the insurance company, comes to believe that there is a considerable element of doubt in every case.

All of us have opinions based upon our personal experience. Is it surprising that a physician who knows nothing about the true nature of the back injury should believe that his cases which go on to a hearing before the commission are exaggerated or fraudulent? When he has used his knowledge and his equipment, which he believes to be adequate, and has found nothing to account for the claimed disability, he naturally arrives at the conclusion that there is misrepresentation. As the physician is the expert in the case, it is inevitable that the commissioner should be somewhat influenced by his opinion.

My own belief, based upon the experience I have had (and I am sure it is the belief of all experienced osteopathic physicians), is that few of these cases at least in the beginning, are malingerers. No back injury case which I have treated from the onset of the injury has ever been reviewed by the industrial court. In these cases there was no question of malingering for the commissioner to decide.

Malingerers are made by neglect. When a man genuinely crippled by a back injury and suffering pain

Editorial Note—The Central office has just been advised by Dr. McCormack that 212 case reports were received from Lorenzo E. Butts, Nelsonville, Ohio, the largest single contribution to date, and bringing the total to 2,370 case reports filed with the Bureau of Industrial and Institutional Service.

leaves the office of a physician with the cause of his disability undiscovered and nothing done to relieve it, he leaves there with doubt in his mind as to the sincerity of the effort to help him. If, later his compensation is withheld and his integrity impugned while his disability continues or grows worse, he would be more than human if he did not decide to get, by one means or another, all the money he could.

If the back injuries of industry were referred to osteopathic physicians as regularly as herniae are referred to the surgeon, and with as little question, the psychology of the situation would be completely changed. The injured worker would feel that he was in the hands of a physician who knows what to do for him. He would feel that the doctor is his friend instead of his enemy, and that his employer and the insurance company are genuinely interested in his welfare. Both the incentive and the opportunity for malingering would tend to disappear.

As these cases are now handled, the physician, although he can find nothing wrong, takes pay for treating them and later testifies in the interest of the insurance carrier. Other physicians hesitate to examine and testify for the injured at these hearings for fear of being classed as "ambulance chasers" or as being allied with "damage suit" lawyers. This really scandalous situation is too little understood. In reality it goes far toward nullifying the intent of the workmen's compensation laws which is to provide adequate compensation and competent treatment for the wounds of industry.

These are the aspects of the back injury situation which must be made plain to the compensation commissioners of all the states. It will not suffice simply to send the chairman of each commission a piece of literature. They must be contacted by someone who knows the answers to the questions they might wish to ask.

The osteopathic profession has a job to do in this connection. It is a job that will take a lot of doing. It will not be accomplished in a day. But it is a job worth doing. If we do not do this job in time, our imitators will. It is both a duty and an opportunity. It should not be neglected.

COMMITTEE ON VOCATIONAL GUIDANCE

MARY L. HEIST
Chairman
Kitchener, Ont.

WE MUST BELIEVE IN IT

To be able to sell osteopathy to patients and to students we must believe in it ourselves.

To believe in it we must understand it; we must read our books and journals; we must attend conventions and become acquainted with our leaders; we must attend review and postgraduate courses to learn of the advancement being made; we must listen to those who have a wide view and a long look.

We have not arrived either as a science or as a profession; we have not even a good start. Now is no time to be complacent; now is the time to be alert and progressive.

Then when we have informed ourselves of its possibilities we must make use of osteopathy: For ourselves, by taking treatment regularly, sufficiently often to keep in perfect condition, exchanging with another osteopathic physician. (Nothing will keep up our faith like this personal experience of letting osteopathy cure our ills and keep us fit); for our own families. (They, too, need our ministrations and we need their encouragement); for our office staff, who need both our services and our enthusiasm; for our servants who, too, will be boosters for osteopathy if we merit their loyal support.

If we then keep up our own loyalty by creating loyalty in others we shall readily create interest in the vast army of youth who are looking for a life work. The best of them are not looking for a soft job but are looking for something which will challenge their best efforts and to which they can consecrate their lives. If we grasp the bigness of osteopathy we shall be able to make others vision it.

If we rely on osteopathy in our own hours of need, if we put it to the test, it will not fail us, but will prove its worth and dependability.

First, we must know osteopathy; second, we must test it; and third, we must trust it. Then we can tell the world and the world will listen.

M. L. H.

LEGAL AND LEGISLATIVE

A. G. CHAPPELL
Jacksonville, Fla.
Legislative Adviser in State Affairs

KANSAS CORPORATION CANNOT PRACTICE OPTOMETRY

On December 6, 1935, the Supreme Court of Kansas rendered a decision, reported at length in the *Optometric Weekly* for December 19, holding that a corporation may not engage in the practice of optometry as defined by the statute, either directly, or indirectly through the employment of duly registered optometrists.

A Missouri corporation with a retail jewelry store in Kansas City, Kans., had employed an optometrist whose services were free to patrons of this store and later made an arrangement including the renting of space to a registered optometrist whose services were paid for by the company and not by the customer.

The Supreme Court acted to oust the defendant "as a corporation exercising any claimed rights or powers to practice optometry," and enjoined it "from the doing of any act or acts, singly or together, which constitute the practice of optometry within the state."

MASSACHUSETTS LEGISLATURE IN SESSION

A bill was presented before the House in Massachusetts to require that applicants for licensure by the State Board be graduated from colleges approved by the Board. The Massachusetts Osteopathic Society vigorously opposed the bill on the ground that with one osteopathic member of the board and six other physicians, unfairness would result. The bill was before the education committee which accepted an amendment to exempt Massachusetts schools from the law and so reported the bill.

A House bill to require annual reregistration of physicians and an annual publication of duly registered physicians was killed by the public health committee at a hearing when no one spoke for it.

There is a House bill to permit patients in tax-supported institutions to have their own physicians. Fully 100 osteopathic physicians are reported to have attended the hearing on February 6 before the public health committee.

A bill has been introduced in the Senate to provide for representation on the Board of Registration in Medicine of the several medical schools of the Commonwealth.

Bills have been introduced in the House to abolish compulsory vaccination; to establish a board of examination in chiropractic, and to require persons who give notice of intention to marry, to furnish health certificates.

COMPULSORY DIPHTHERIA IMMUNIZATION IN NEW JERSEY

It is reported that on January 28, John McCann of Newark, N. J., was fined $50.00 and sentenced to thirty days in jail by the juvenile court for refusal to allow his six-year-old son to be immunized against diphtheria. The prosecution was under a section of the child welfare act of 1915 which defines as neglect the failure to permit the performance of an act necessary to a child's physical welfare.

The father said he knew of children in other families who suffered ill effects after receiving the serum. His attorney argued that there was no law establishing that immunization is necessary to the child's welfare. The

city health officer denied that deleterious effects result from immunization.

He said the law had been used to compel parents to permit children to receive the serum, but in those cases the parents had yielded under court pressure without actual conviction.

NEW REGULATIONS FOR LICENSE IN RHODE ISLAND

The following regulations were adopted by the Rhode Island Board of Examiners in Osteopathy at a recent meeting:

Applicant must be a graduate of a school of osteopathy approved by the American Osteopathic Association and then only from such schools, when so classified, as are approved by this Board at the date of the graduation of the applicant.

Proof of graduation from an approved osteopathic school must be furnished, and in addition, any applicant graduating after 1939 shall furnish proof of premedical education of at least two years' satisfactory work in a recognized college of arts and sciences covering at least half the work required by that institution for the awarding of an A.B. or B.S. degree. Such premedical credentials must have the certification of the Rhode Island Department of Education.

Candidates for unlimited osteopathic license must also file, on blanks furnished by this Department, proof of at least one year's internship in a hospital approved for internship by the Council of Medical Education and Hospitals of the American Medical Association or the American Osteopathic Association, and then only if such hospitals are approved by this Board at the time of serving internship.

The filing of an application does not constitute permission to take the examination. Candidates whose applications are acceptable will be notified to appear for examination. No special examinations will be given. No temporary or limited licenses can be issued. Rhode Island has no reciprocity with other states.

Diplomates of the National Board [of Examiners for Osteopathic Physicians and Surgeons] will be given an oral examination before the Board—only at the next regular meeting following the regular quarterly examination, but the application must be submitted sixty (60) days in advance to allow for proper verification of credentials.

Candidates who fail to pass the examination may be reexamined within one year as provided in Chapter 159 of the General Laws, without payment of any additional fee. In all subsequent examinations the candidate must pay the regular fee. Examination will be conducted in English. The assistance of an interpreter is not permitted. A general average of 80 per cent is necessary for license but no applicant will be licensed whose grade in any one subject or division falls below 65 per cent. Reexaminations shall include all subjects and divisions.

A FEDERAL PURE FOOD AND DRUGS BILL

Congressman Kennedy of New York on January 13 introduced in the House of Representatives a bill for a Federal Food, Drugs and Cosmetic Act, identical with the Copeland bill.

Too Many Physicians

A fairly close estimate of the number of physicians in the United States seems to indicate that there is one physician for each 814 of the population. The Commission on Medical Education says that one physician for every 1,200 persons is sufficient. Estimates of certain actuaries, who have figured prominently in the news concerning health insurance, conclude that under a panel system one physician should not care for more than 1,000 patients.

R. C. Mc.

COMMITTEE ON VETERANS AFFAIRS

WARREN W. CUSTIS
Chairman
Dayton, Ohio

VETERANS! PLEASE ANSWER

Attention is again called to the need for certain information regarding service records of osteopathic physicians, this for the purpose of aiding the work of the Committee to secure osteopathic care for disabled or sick veterans. Answers to these questions should be sent to Dr. Custis at 1005 Reibold Bldg., Dayton:

Name.

Address.

When and where graduated in osteopathy?

Branch in which you served.

Are you a disabled veteran?

Are you a member of the American Legion?

Are you a member of the Disabled American Veterans of the World War?

Are you a member of the Veterans of Foreign Wars?

Do you take an active part? If so, specify.

What office do you hold or have you held? (Be specific as to dates, names of organizations, etc.)

What can you do toward bringing osteopathy to the attention of the most influential men in your organization?

What can you, your post or department, do in the way of an educational campaign or passing resolutions?

What suggestions have you as to an osteopathic organization of veterans or as to the best course of action for this committee to take?

How many veterans have you treated during the past three years and for what ailments?

W. W. C.

Diagnosis and Treatment

OCCIPUT-ATLAS-AXIS*

H. H. FRYETTE, D.O.
San Mateo, Calif.

The occipito-atlantoid and atlanto-axial articulations are probably the most vulnerable of any of the spinal joints. They are mechanically the weakest joints in the spine.

Most groups of muscles have opponent groups to balance function. In the cervical region the muscles are not balanced. In the upright position the anterior group is entirely inadequate, and as a result the upper cervical spine is bowed entirely too far forward.

It is common knowledge that the suboccipital region is contracted and congested especially in cases of worry, general nerve tension, and toxemia. I am not sure of the reason for this. These muscular conditions of course distort cervical articulations and result in chronic subluxations.

The neck is exposed usually to drafts and temperature changes, especially in these days of automobile travel. Children seem possessed to grab each other by the neck in wrestling because it is a handy hold. Also this weak region is subject to the strain put upon it by the pull of the shoulder and back muscles.

Tall people have a way of butting their heads into things and getting upper cervical or occipital lesions, and almost everyone cracks his head on the top of an automobile sooner or later.

The upper part of the neck suffers from fatigue more than any other part of the body. In the first place, at

*Delivered before the Technic Section of the Thirty-Ninth A.O.A. Convention, Cleveland, 1935.

this evolutionary stage of human development, the head is too heavy for the neck, and in the second place the neck is always at work unless we are lying down. We often sit down and rest the body from the shoulders down, but the neck has to support the head and we keep it moving almost constantly.

It is impossible to consider causes of upper cervical trouble without considering the spine as a whole. Few people have spines that are in perfect balance, laterally or anteroposteriorly. The head always tends to adjust itself to the line of gravity.

For some reason, which I am not sure I understand, most human spines veer to the left of the line of gravity in the lumbar region, cross it at the eleventh thoracic vertebra, travel up on the right side of it to the sixth cervical vertebra, and pass up on the left side to the occiput. The occiput sidebends to the left and slips to the right. This condition in the cervical region is the result of compensation for imbalance lower in the spine.

The modification of symptoms is one thing; obtaining a cure is another. A cure can be secured only by removing the causes of the trouble. I did not say cause, but causes, for the longer I practice the more I come to look for many causes and many combinations of causes. Thus it is with as simple a condition as subluxation of the upper cervical vertebrae. If the common condition of the spine that I have just mentioned or any other distortion exists, the neck will attempt compensation and the predisposing cause or lower spinal condition, must be removed. This is sometimes difficult.

The longer I practice the more important the cervical region becomes to me. We think of the nutrition of the ears and eyes, but we do not think enough of the nutrition of the brain. We hear a great deal about the nutrition of the heart, the circulation to the liver, etc., but the nutrition of the brain—the most important part of the nervous system—is seldom mentioned. The upper thoracic and cervical region control the nutrition of the brain.

I suppose I should not criticise nature, but I cannot help thinking that the arrangement of the vertebral arteries is very poor. The destiny of their contents is very important, and what was evidently intended as their protection too easily may become an obstruction. It must be remembered also that the vertebral veins travel with the arteries, and what can be worse, from a nutritional standpoint, than an anemic region improperly drained. A perfect field for infection must result.

Anteriorly there are the vagal nerves, the cervical sympathetics, cervical lymphatics, carotid arteries, and jugular veins among the most important structures, all of which are disturbed by upper cervical lesions, and as a result there is great confusion arising in the submaxillary region.

A structure that permits as much motion and is naturally as weak as the upper cervical is subject to an infinite variety of subluxations, but the most common combination of lesions is the one I shall attempt to describe. This combination of lesions may be a compensation for conditions lower in the spine, as I have said, or it may exist independently.

The axis in relation to the third cervical vertebra is sidebent to the right and rotated backward on the right side, that is, the articulating facets on the right side are approximated. On account of the saddle shape of the bodies of the upper cervical vertebrae, the body of the axis pushes to the left as far as the intervertebral disc and the capsular ligaments will permit. The atlas attempts to compensate by rotating anteriorly on the right side, but is sidebent to the right, as is its foundation, the axis. Then the occiput is sidebent to the left, slipped to the right on the atlas and rotated on its axis, so that it is posterior in relation to the atlas on the right side and anterior on the left. In other words, the transverse process of the atlas protrudes laterally and posteriorly to the occiput on the left side and the occiput protrudes laterally and posteriorly on the right side.

Procedure of Correction.—I think that occipital subluxations are usually considered difficult of correction. One reason for this is probably due to the fact that the atlanto-axial articulation is very mobile and weak, whereas the occipito-atlantoid articulation is very strong. This naturally gives us a very short lever to use in adjusting the occiput if we want to prevent strain of the atlanto-axial segment.

Many years ago a case with an occipito-atlantoid lesion that had resisted all treatment was referred to me. I attempted an adjustment, but the whole thing seemed hopelessly locked. In the hope of doing something for the patient, I adjusted the axis on the third cervical vertebra, and then began a gentle manipulation of the occipito-atlantoid region. Much to my surprise all the structures fell into place. The axis-third lesion seemed to be the key to the combination, so I have been proceeding in that order ever since.

This is a combination that is seen many times a day. We must first adjust—or I had better say unlock—the axis on the third cervical vertebra. After relaxing the suboccipital muscles well, especially on the side where the atlas is posterior to the occiput (that is the left suboccipital region in the case I have described), with the forearm on the table the hand is thrust under the patient's head, the transverse processes of the atlas are grasped between the thumb and middle finger (to immobilize the atlas), the crown of the head is held in the other hand, then remembering that the occipito-atlantoid joint is really a ball and socket joint, the occiput is rocked into position.

I never feel that I have normalized this region completely until I have thoroughly but gently relaxed the submaxillary tissues.

212 El Camino Real

Current Medical Literature

Abstracted by R. E. Duffell, D.O.

Sciatica and the Fascia Lata

In *The Journal of Bone and Joint Surgery* for January, Frank R. Ober explains how sciatica can be relieved by the simple procedure of incising the iliotibial band and fascia lata. In this manner the muscular pressure (exerted by the contracture of the fascia lata) on the sciatic nerve where it emerges below the piriformis muscle is released.

The operation is described as follows: "The incision is oblique and begins at a point a little lateral to the anterior iliac spine, extending downward and backward to a point about one inch posterior to and one inch above the greater trochanter and exposing the fascia lata. The iliotibial band and fascia lata are next incised posteriorly well over the anterior portion of the gluteus maximus muscle. The incision is now carried forward to a point just below the anterior superior spine and includes the fascia surrounding the tensor fasciae latae. All intermuscular septa in this region are divided.

"As soon as the section is completed, there is a marked separation of the cut surfaces. The fascia is further separated by blunt dissection until there is a gap of two inches." Following this the wound is closed.

Since May 2, 1934, forty-two patients have been operated upon. In most instances, the relief from pain begins on the fifth to tenth day after operation. Ober reports that the lame back clears up in from six weeks to six or eight months, the motions of the spine return to normal, the sciatic scoliosis disappears, posture improves, the increased compensatory curves decrease, and pain at the root of the neck disappears. (See editorial comment p. 344, this issue of THE JOURNAL.

A New Insulin Product

H. C. Hagedorn and his associates, working at the Steno Memorial Hospital, Copenhagen, Denmark, have developed a preparation the effect of which is more prolonged than—about twice as long as—ordinary insulin. Its use avoids, to a great extent, marked fluctuations in blood sugar. The preparation is called protamine insulinate, and its principal advantage is that it breaks down slowly in the subcutaneous tissues, thereby prolonging the action and keeping the blood sugar uniform.

The studies and investigations that led up to the preparation of protamine insulinate are outlined in *The Journal of the A.M.A.* for January 18. The product is made by combining the usual insulin hydrochloride (in solution, pH about 2.5) with a protamine derived from the sperm of a species of trout, Salmo iridius. The compound which is formed has its point of minimum solubility at pH 7.3, or at about the reaction of blood serum. After the subcutaneous injection of a turbid suspension of protamine insulinate, the compound is slowly broken down and the active insulin released over a relatively long space of time, thus allowing for an evener and more prolonged effect on the blood sugar.

In most cases of diabetes, however, it is necessary to continue the use of ordinary insulin in the morning in order to get a quick effect, while the new product is given at bedtime. No ill effects have been observed from the use of protamine insulinate. The injection is painless, there is no local reaction, and protein reactions do not occur.

Root, White, Marble and Stotz report their clinical experience with the new product in the same issue of *The Journal*. They confirm the observations of Hagedorn and his associates, but list some of the disadvantages: The compound is not indefinitely stable since the protamine must be added to a given vial of insulin only as it is needed for use within the ensuing days or few weeks. Because the action is slow, it is unsatisfactory in diabetic emergencies, as during infections or acidosis. It may be difficult to control the blood sugar in the few hours following the evening meal unless the carbohydrate allowed at this meal is materially reduced.

The new preparation is still in the experimental stage and further work is needed to determine when, how, and in which patients protamine insulinate or some related compound can be used to the best advantage.

Method for Reduction of Dislocations of the Shoulder Joint

The replacement of the humeral head into the glenoid cavity by the methods commonly in vogue is sometimes difficult, and in many instances its reduction is accompanied by additional injury to bone or soft tissue. Arthur A. Zierhold describes a new method in *Surgery, Gynecology and Obstetrics* for December, 1935, which requires no great expenditure of strength and affords powerful controlled traction on the humerus without the help of an assistant or special apparatus. It can be used even in fractures of the surgical neck of the humerus, the tuberosity or the shaft. No force is applied to the dome of the axilla and consequently there is no danger of injury to the vessels or nerves, such as often occurs when the foot is placed in the axilla. The method is described as follows:

"The patient is placed on his back upon a table, the operator standing at his affected shoulder and facing toward his feet. The affected arm is then taken by the wrist and with the elbow extended is abducted to 90 degrees. The elbow of the operator is then placed against the patient's chest wall just below the axilla, and the palm of his hand engages the bend of the patient's elbow. Using the base of his palm as a fulcrum, the operator then further flexes the patient's arm at the elbow joint, thus making use of a powerful lever which makes controlled traction upon the dislocated humerus. The operator completes the maneuver by still further flexing the arm at the elbow and adducting the humerus to 45 degrees." This should bring the humeral head into the gleanoid cavity.

A Useful Diagnostic Sign in Vertebral Injuries

Fractures of the vertebrae are not always discovered at the time of injury because the clinical picture is clouded by damage to muscles and ligaments and by fractures of the extremities, which receive the surgeon's first attention. Often damage to the spinal column is not suspected until the patient is ambulatory. Then diagnosis is usually made, clinically, by pain, limitation of spinal motion and tenderness; symptoms and signs which are generalized and which may be the result of other lesions than a vertebral injury. To make an examination of the back, the patient is often moved about and handled in a manner which is not only painful but also harmful.

The procedure described by Ralph Soto-Hall and Keene O. Haldeman in *Surgery, Gynecology and Obstetrics* for December, 1935, does away with rough handling and yet is extremely helpful in the diagnosis of vertebral injuries. They described it as follows: "The patient is placed flat on his back without pillows, the examiner places one hand upon the sternum of the patient exerting a slight pressure so that no flexion can take place either at the lumbar or dorsal regions of the spine; at the same time the examiner's other hand is placed under the occiput and with this hand the head is bent upon the neck, then slowly but forcibly, the head and neck are flexed upon the sternum. This produces a progressive pull upon the posterior spinous ligaments, starting at the ligamentum nuchae and being transmitted downward to the interspinous ligaments until it reaches the spinous process of the injured vertebra. On this it acts as a lever gently compressing the body and producing pain which the patient localizes very accurately."

The authors have employed this sign in a large number of cases during the past four years. The sign was found to be uniformly present in patients with recent compression fractures of a vertebral body which could be demonstrated by the x-ray. They believe that a negative test within one month after an injury to the back is conclusive evidence of the absence of vertebral fracture.

This sign is positive in a small percentage of cases of acute sprain of the back, also in vertebral tuberculosis during the active stage, and in tumors when some damage has occurred to the body of the vertebra.

Current Osteopathic Literature

Abstracted by R. E. Duffell, D.O.

THE OSTEOPATHIC BEACON
CHICAGO
December, 1935

The Osteopathic Beacon Returns.—p. 3.
*Do We Speak a Common Language? R. N. MacBain, D.O., Chicago.—p. 4.
New Faculty Organization.—p. 6.
C.C.O. Convention Programs.—p. 7.
Postgraduate Course. December 30 to January 4.—p. 8.
First Charity Ball Huge Success.—p. 9.
From the Archives of the Diagnostic Service Chicago Osteopathic Hospital. Paroxysmal Tachycardia.—p. 10.
Kirksville College President Guest Speaker.—p. 11.
Student Council Recruiting Campaign.—p. 11.

***Do We Speak a Common Language?**—With this discussion on terminology, MacBain introduces the articles on technic which will appear in future issues of *The Osteopathic Beacon*. He says that the terms to be used in these articles will be those that were formulated by the Committee for the Study of Nomenclature and Terminology of Osteopathic Technic and adopted by the Associated Colleges of Osteopathy, but that the terms will be supplemented by other descriptive terms for a better understanding of osteopathic pathology and of the technic required for the individual problem.

As MacBain points out, the naming of the spinal joint lesion according to bony relationships only, leaves much to be desired, such as a knowledge of the tissue changes around the segment. He explains also that "Traumatic injuries to a joint are never exactly identical.

A given force applied to a spinal joint may result in an excessive lateral flexion of the joint with a minimum of accompanying flexion or extension and rotation. To correct this type of lesion the major force applied would be one that would overcome the lateral flexion with secondary emphasis on flexion or extension and on rotation. In a second lesion of the same area, the causative trauma could be such as to produce a marked rotation of one segment on another with only a secondary degree of lateral flexion and flexion or extension. The corrective force in this second lesion would be directed primarily toward rotation with secondary emphasis on lateral flexion and flexion or extension.

"All three elements of normal joint movement—flexion or extension, lateral flexion, and rotation—would be involved in the production of the two lesions described above. The terminology used to describe both lesions in terms of positional change would be identical. The pathologies to be treated would not be identical and while a corrective force embracing all three movements would be required in each case, the major corrective force would not be the same in the two lesions."

OSTEOPATHIC DIGEST
PHILADELPHIA
9: No. 4 (January), 1936

Dean Holden Makes Educational Announcement as to Future of College—Dr. Thomas R. Thorburn Responds.—p. 3.
Plans Completed for Gala Charity Ball and Dinner.—p. 8.
The Alumni Association's Fourteen Year Plan. Donald B. Thorburn, D.O., New York City.—p. 10.
Alumni Association Announces Expansion Program.—p. 11.
Admiral Byrd Breaks Captain Cook's Record.—p. 11.
*Scientific Supplement. Vol. I No. 4, pp. 13-22. A Review of the Processes of Blood Formation and Blood Destruction to the Mechanism of the Production of the Anemias, by Otterbein Dressler, D.O., Philadelphia. Clinical Manifestations and Therapeutic Data in the Anemias, by Ralph L. Fischer, D.O., Philadelphia.
English Department Initiates Course in Public Speaking. Donald Nelson Koster, Philadelphia.—p. 29.
Women's Auxiliary.—p. 30.
The Axone.—p. 31.

***The Anemias.**—Various classifications have been proposed for the anemias by many investigators. The most logical of these classifications is based on the morphology of the blood and blood-forming tissues. Fischer has chosen the hematological classification of Haden for his presentation of the anemias. This classification is based on a study of the color and volume indices of the red cell.

As explained by Dressler, the color index is an indication of the amount of hemoglobin which is carried by each erythrocyte. The color index is obtained by dividing the percentage of hemoglobin by the percentage of erythrocytes. If the erythrocyte count is 4,000,000 (80 per cent) and the hemoglobin is 64 per cent, the color index will be 0.8 indicating that each erythrocyte is carrying only 0.8 as much hemoglobin as it should.

The volume index is an indication of the average size of the erythrocyte and is obtained by dividing the percentage of normal volume by the percentage of erythrocytes. When a known amount of uncoagulated blood is centrifuged, the erythrocytes sediment out, occupying normally 46 per cent of the volume. This normal volume is based on 5,000,000 cells of average diameter (7.5 microns) in one cubic millimeter of blood. If a volume of erythrocytes makes a bulk of only 25 per cent of the whole blood, this would be about 55 per cent of the normal value. If the number of the erythrocytes were 3,000,000 a cubic millimeter that would be 60 per cent of the normal number. The results of dividing the percentage of normal volume (55) by the percentage of erythrocytes (60) would show a fraction 0.91 indicating that the average erythrocyte is only 0.91 times as large as it should be.

Fischer describes the physiology of blood formation and destruction and comments that these two functions must be correctly balanced if anemia is to be prevented, relieved, or cured. In anemia, three general types of red blood cells are seen: the normocyte which is essentially normal in size, the oversized macrocyte, and the undersized microcyte. Based on Haden's classification, for instance, in chronic blood loss, mild infection or lowered metabolism, there is first a reduction of hemoglobin without change in the size of cells. This is termed *normocytic hypochromic* anemia. If the etiology is prolonged and there is iron deficiency, the cells become smaller and the anemia is termed *microcytic hypochromic*. The Addisonian type (pernicious) is termed *macrocytic hyperchromic*. Malignancy, poisons, or toxemias may produce the *macrocytic hypochromic* or the *macrocytic normochromic* types.

A clinical classification of the anem' may be based on the type of treatment indicated. Does the type of anemia need therapy for defects in cell formation (supplied by adequate dosages of the specific antianemic factor found in liver) or does it need principally hemoglobin (as provided by iron)? With this in mind, Fischer describes the clinical manifestations and required treatment for (a) acute hypochromic anemia, (b) chronic hypochromic anemia, (c) simple anemia, (d) hyperchromic anemia, (e) combined system disease, (f) vitamin C deficiency, and (g) hemolytic anemia.

CLINICAL OSTEOPATHY
LOS ANGELES
31: No. 7 (January), 1936

The Role of Bony Pathemas in Lower Back Pain. Dain L. Tasker, D.O., Los Angeles.—p. 5.
Osteopathic Antepartum Care. C. S. Johnson, D.O., Mecca, Calif.—p. 9.
*Cataract. Hoyt F. Martin, D.O., South Pasadena, Calif.—p. 12.
Use and Misuse of Toxic Drugs.—p. 14.
Infant Dietary During the First Three Months of Life.—p. 14.
Editorials—Present Medical System Absurd, Says Dr. Cabot. Postgraduate Work at C.O.P.S.—p. 15.

***Cataract.**—Martin gives the etiology, symptoms, surgical and nonsurgical treatment of cataract. Under etiology he lists hereditary or congenital influences (intrauterin inflammations or faulty development), occupation (furnace workers, glass blowers, etc.), trauma, concussion, severe electric shock, and systemic disease such as diabetes and kidney disorders. Secondary cataracts may be caused by infected corneal ulcers, glaucoma, and acute inflammation of the inner layers of the eye structure.

The principal symptoms are lowered visual acuity, fixed spots before the eyes, diplopia at times, and progressive myopia.

Congenital cataracts and those, usually, of a soft nature, often found in young patients, are treated by discission or needling. Senile cataracts, the hardened type, are removed as soon as useful vision is lost.

The nonsurgical treatment consists in overcoming the hypercalcemia, which, it is believed, predisposes to the formation of lens deposits. The feeding of Vitamin G (which helps the metabolism of calcium) over a period of months will tend to stop the progress of the disease and may even result in the absorption of the lens deposits. Body irradiations of ultraviolet light, and radiotherapy through the eye itself have been found beneficial. Antidiabetic and antineuritic treatment should be administered if these conditions are present.

THE BRITISH OSTEOPATHIC REVIEW
LONDON, ENGLAND
2:65-88 No. 4 (November), 1935

Notes by the Editor. O. B. Deiter, D.O., London.—p. 68.
Osteopathy. R. Hope Robertson, M.B., Ch. B., D.O., Roundhay, Leeds.—p. 69.
The Physical Education of Children. George Hurren.—p. 70.
Foot Balance. T. L. Northup, D.O., Morristown, N.J., U.S.A.—p. 71.
*Osteopathy Applied to Acute Infections. W. Kelman Macdonald, M.D., D.O., Edinburgh, Scotland.—p. 73.
Cardiac Complications in Infections on Childhood. Leo C. Wagner, D.O., Lansdowne, Pa., U.S.A.—p. 75.
Colonic Therapy.—p. 76.
Examination and Treatment Couch.—p. 76.
Kingswood Court: The Walton Heath Osteopathic Hydro.—p. 77.
The Proposed College.—p. 77.

THE BRITISH OSTEOPATHIC REVIEW

(Continued)

Sunlight Is Life.—p. 78.
National Osteopathic Convention: New York City, July, 1936.—p. 78.
Traction and the Intervertebral Disc. J. J. Dunning, D.O., London.—p. 79.
Diseases Peculiar to Women. T. Stirling Torrance, M.B., Ch.B., B.Sc.—p. 81.
The Clinic. G. Howard Nash, C.B.E.—p. 85.
Books Reviewed.—p. 86.

***Osteopathy Applied to Acute Infections.**—Macdonald provides statistics on the incidence of measles in the British Isles. In children up to one year of age, excluding pneumonia, to which measles gives a heavy contribution, there is no disease which causes a greater number of deaths than measles. At three and four years, whooping cough and diphtheria cause more deaths, but the total for ages from one to four years is lower than measles.

The author describes the typical symptoms and signs of measles and names the usual complications. He says that osteopathic physicians alone have the means of early influencing and possibly controlling the dreaded complications. Also, they alone have the general therapy which can favorably influence the course of the disease.

Osteopathic manipulative treatment in measles, as in any acute exanthem, aims at normalizing the autonomic nervous system through mechanical adjustment of osteopathic joint lesions. Macdonald recommends correction early in the disease of the atlas, if it is in lesion, and of any lesions of the upper thoracic vertebrae. Treatment twice daily during the acute stage is advisable. Corrective work may be done in the morning, but in the evening a general relaxing treatment of short duration is more desirable. He says that no child is too ill to receive benefit from expert osteopathic adjustment.

THE JOURNAL OF OSTEOPATHY
KIRKSVILLE, MO.
43: No. 2 (February), 1936

General News.—p. 5.
Editorial—Legislation. The Outlook for Osteopathy. George M. Laughlin, D.O., Kirksville, Mo.—p. 9.
The Relative Importance of the Clinical and Laboratory Diagnosis. Charles F. Kenney, D.O., Fort Worth, Tex.—p. 11.
*Laboratory Tests for Drug Addiction. R. C. Slater, D.O., Macon, Mo.—p. 13.
Psoitis. D. C. Delbridge, D.O., Kirksville, Mo.—p. 14.
Quick, Watson—Hide the Needle! Mr. J. C. Button, Jr., Kirksville, Mo.—p. 17.
Management of Normal Deliveries. K. A. Bush, D.O., Harper, Kans.—p. 19.
Historical.—p. 21.
Science News Notes. W. J. Deason, M.S., D.O., Chicago.—p. 23.
News of Kirksville.—p. 24.
In Newspapers and Magazines.—p. 28.
The Forum.—p. 30.
Book Reviews.—p. 34.
State and District Meetings.—p. 36.

***Laboratory Tests for Drug Addiction.**—Slater reviews some of the simpler tests that may be performed during a routine urinalysis for the detection of drugs that may have been prescribed by a previous physician or that are being taken by a patient who is unwilling to admit his addiction. The tests include those for aspirin and salicylates, chloral hydrate, morphine, phenol, phenolphthalein, quinine, acetanilid and phenacetin, antipyrine, and arsenic. A simple test for aspirin and salicylates, a standby in painful joint afflictions, is as follows:

"Boil a small amount of urine to drive off the diacetic acid if any be present. Add a few drops of 10 per cent ferric chloride solution. A bluish violet color will appear if the test is positive. If the amount present is small, it can be concentrated by acidifying the specimen with hydrochloric acid, then extract the drug with ether. Evaporate the ether, and making up a watery solution of the residue, apply the test to it."

For morphine addiction, the following test is given by Slater: "Add enough ammonia to the specimen to make it definitely ammoniacal. Add at least one-third of ether to the amount of urine and shake well. Evaporate the ether and to the residue in a glass container add a few drops of formaldehyde-sulphuric acid. If morphine is present, a purplish red color will appear which changes to violet, blue violet and finally nearly a pure blue color. The reagent must be freshly prepared by adding one drop of formalin to one cc. of pure concentrated sulphuric acid."

THE COLLEGE JOURNAL, KANSAS CITY COLLEGE OF OSTEOPATHY AND SURGERY
20:1-32 (January), 1936

Kansas City Society of Osteopathic Physicians and Surgeons. Hazel A. Clark, D.O., Kansas City, Mo.—p. 4.
The A.O.A. Regional Conference. Hazel A. Clark, D.O., Kansas City, Mo.—p. 5.
Hirschprung's Disease. A Clinical Study. Yale Castlio, D.O., Kansas City, Mo.—p. 9.
Cheap Service. George J. Conley, D.O., Kansas City, Mo.—p. 13.
Uterine Fibrosis. George J. Conley, D.O., Kansas City, Mo.—p. 15.
*Pertinent Pregnancy Points. Margaret Jones, D.O., Kansas City, Mo.—p. 19.
The Ultraviolet Light. Annie G. Hedges, D.O., Kansas City, Mo.—p. 21.
Pertussis. Mamie E. Johnston, D.O., Kansas City, Mo.—p. 24.
The Chronic Systemic Diseases of Pregnancy. R. G. Jennings, D.O., Weston, Mo.—p. 26.
"How's Your Liver?" W. M. Pearson, D.O., Kansas City, Mo.—p. 28.

***Pertinent Pregnancy Points.**—Jones cautions against relying too much upon laboratory tests for the safeguard of the woman through pregnancy.

Even tests for pregnancy are not always reliable. The presence of hydatidiform mole and malignant chorion-epithelioma will give a positive Friedman and Ascheim-Zondek reaction, while a negative reaction does not always exclude pregnancy. Students must be trained to diagnose pregnancy by the ordinary means—the classical signs and symptoms.

Important as are blood pressure readings and urinalyses, these alone are not adequate indications of the patient's condition. Jones cites a series of cases reported by D. G. Royston. One of these cases had a blood pressure reading of 102/54 just two and one-half hours before she developed convulsions; also in this series "'only slightly more than half' who developed convulsions 'had more than a trace of albumin and casts before convulsions.'"

The toxemias of pregnancy usually are avoided if proper osteopathic care is given regularly (and this means the inclusion of regular osteopathic manipulative treatment particularly). In Jones' obstetrical experience only 10 per cent of patients develop edema, even in the lower limbs, and only 4 per cent manifest other toxemia symptoms, such as high blood pressure and other pre-eclampsia signs and symptoms.

Book Notices

EPIDEMICS AND CROWD-DISEASES: An introduction to the Study of Epidemiology. By Major Greenwood, D.Sc., F.R.C.P., F.R.S., President of the Royal Statistical Society. Cloth. Price, $5.50. Pp. 409, with 8 illustrations. Macmillan Company, 60 Fifth Ave., New York City, 1935.

This book is written by a distinguished epidemiologist. Throughout the book he emphasises the statistical method of treating epidemiologic data so that a statistician would read it more easily than others and yet one not versed in higher mathematics can derive pleasure and information from its study.

The first part of the book takes up general principles and methods, and after that more than two hundred pages are given to discussions of particular diseases or historical happenings, such as: the typhoid group; cholera; typhus; Edward Jenner and Charles Creighton, etc. The author is frank to say that available statistics do not at all bear out any of the claims made by allopathic physicians as to what their science has done for health. For instance, he says: "We do not really know why the rate of mortality for tuberculosis has fallen as it has; we have not the least idea why scarlet fever, deadly fifty years ago, is now a relatively trivial cause of mortality." "We are entitled to infer that for the scarlet fever of our generation isolation cannot be shown to have conferred any advantage in the way either of prevention of infection or of

reducing mortality." "Without doubt, it is idle to speak of the conquest of tuberculosis."

Again in discussing the drop in the tuberculosis death rate he mentions three different schools of thought: The medical, the humanitarian, and the biological. The medical, he says, has published analyses of the causes of decline of tuberculosis to show that it is due to the increase in utilization of medical methods. The humanitarian group has published analyses to show that the improvement was caused by a rising curve of real wages and of well-being in general. The biological group he says, "are differentiated from and regard both the former groups with a pretty impartial contempt. The altar of their idolatry is pure science; they despise the medical group because medical science is so slap-dash—people going about the world talking of science who could not integrate the simplest differential equation nor tell the difference between a homozygote and a heterozygote; they loathe the second group, members of which do not believe in science of any kind."

1000 QUESTIONS AND ANSWERS ON T.B.: Edited by Fred H. Heise, M.D., Medical Director, Trudeau Sanatorium, and Question Box Editor, Journal of the Outdoor Life. Cloth. Pp. 232. National Tuberculosis Association, New York City, 1935.

This material is assembled from a question and answer department in *The Journal of the Outdoor Life*. It will be helpful and encouraging to intelligent victims of tuberculosis and will prove a help to the doctor by giving answers to more questions than he could take time to analyze and discuss. The material is well organized and satisfactorily indexed.

DISEASES OF WOMEN: By Harry Sturgeon Crossen, M.D., F.A.C.S., Professor Emeritus of Clinical Gynecology, Washington University School of Medicine; and Robert James Crossen, M.D., Instructor in Clinical Gynecology and Obstetrics, Washington University School of Medicine. Cloth. Pp. 999, with 1,058 engravings, including 1 color plate. Eighth edition, entirely revised and reset. Price, $10. C. V. Mosby Company, 3523 Pine Blvd., St. Louis, Mo., 1935.

This has been a standard textbook on gynecology for many years and the new edition maintains its reputation. The material is good, sound and well presented and the illustrations are numerous and excellent.

DISORDERS OF THE BLOOD: Diagnosis, Pathology, Treatment and Technique. By Lionel E. H. Whitby, C.V.O., M.C., M.D., Assistant Pathologist, the Bland-Sutton Institute of Pathology, London, and C. J. C. Britton, M.D., Assistant Pathologist, the Christchurch Hospital, New Zealand. Cloth. Pp. 543, with 65 illustrations. Price, $7. P. Blakiston's Son & Co., Inc., 1012 Walnut Street, Philadelphia, Pa., 1935.

A good, interesting, instructive consideration of this important subject, well presented, comprehensive, adequately illustrated, well organized and well balanced.

A TEXTBOOK OF BACTERIOLOGY. By Thurman B. Rice, A.M., M.D., Professor of Bacteriology and Public Health at the Indiana University School of Medicine. Cloth. Pp. 551, with 121 illustrations. Price, $5. W. B. Saunders Company, West Washington Square, Philadelphia, Pa., 1935.

A clearly written, well arranged, well indexed text somewhat shorter than the usual bacteriology text of recent years when this rapidly growing subject has seemed to call for larger and larger volumes.

DISEASES OF THE NERVOUS SYSTEM. By Smith Ely Jelliffe, M.D., Ph.D., formerly Professor of Psychiatry, Fordham University, New York; formerly adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital; Managing Editor, Journal of Nervous and Mental Diseases, and William A. White, M.D., Superintendent of St. Elizabeth's Hospital, Washington, D. C.; Professor of Psychiatry, George Washington University, and Lecturer on Psychiatry, U. S. Army and U. S. Navy Medical Schools. Sixth edition, revised, rewritten and enlarged. Cloth. Pp. 1175 with 497 engravings and 13 plates. Price, $9.50. Lea & Febiger, Washington Square, Philadelphia, 1935.

This splendid textbook has been largely rewritten in this sixth edition, carrying the recent discoveries, methods, tests, and hypotheses practically down to date. It tells of new methods of examination, new studies in relation to the pathways of the hypothalamus, etc., contains an entirely new chapter dealing with the endocrines, new thoughts in regard to the localization of cerebral neoplasms, and considerable new material on the psychic or symbolic systems. The book continues to deal with the subject of mental and nervous diseases not primarily as a specialty apart from the rest of the world of medicine, but on the other hand as a vital part of the science of medicine, and furthermore as an integral part of other disciplines. The human organisms are looked at from the standpoint of the difficulties which man encounters as a part of the universe as a whole, and subject to its laws.

THE NERVOUS PATIENT: A Frontier of Internal Medicine. By Charles Phillips Emerson, M.D., Research Professor of Medicine, Indiana University, Indianapolis. Cloth. Pp. 453. Price, $4. J. B. Lippincott Co., East Washington Square, Philadelphia, Pa., 1935.

This book fills a need that has been felt for years. It is not a textbook on psychiatry and will perhaps be of little value to the psychiatrist but will be of much use to the general practitioner, since it takes up in a practical way functional disorders, including disorders of sleep and of the personality, and also concerning actual physical disease. The book has many deficiencies, perhaps due to the fact that its author is not trained in psychiatry, but for all that it has much value.

BEE VENOM THERAPY: Bee Venom, Its Nature, and Its Effect on Arthritic and Rheumatoid Conditions. By Bodog F. Beck, M.D. Cloth. Pp. 238. Price, $5. D. Appleton-Century Co., 353 Fourth Ave., New York City, 1935.

This book is written by a man trained in Hungary, Austria, and Germany, practicing in New York City for the last thirty-five years. He has collected quotations and reports on the use of bees in medicine from the time of Hippocrates to the present, including quotations from medical literature and from newspapers, testimonials of doctors, patients, and beekeepers. It is interesting historically, whatever may be true of its scientific value.

State Boards

Illinois

Oliver C. Foreman, 58 E. Washington St., Chicago, reports that the Illinois State Board examinations will be held April 7, 8 and 9 in Chicago.

Iowa

The next examinations by the Iowa Board of Examiners in the Basic Sciences will be held on April 14. Address all communications to E. A. Benbrook, Secretary, Iowa Board of Examiners in Basic Sciences, Iowa State College of Agriculture and Mechanic Arts, Ames.

Conventions and Meetings

Announcements

American College of Osteopathic Obstetricians, New York City, July 18.

American College of Osteopathic Surgeons, Denver.

American Osteopathic Association, Waldorf-Astoria Hotel, New York City, July 20-24. Program chairman, George W. Riley, New York City.

American Osteopathic Society of Ophthalmology and Otolaryngology, Waldorf-Astoria Hotel, New York City, July 16-18.

American Osteopathic Society of Proctology, New York City, July 20-24. Program chairman, Collin Brooke, St. Louis, Mo.

A. T. Still Osteopathic Foundation and Research Institute, New York City, July 20.

Arizona state convention, May.

Arkansas state convention, Little Rock, May.

Associated Colleges of Osteopathy, New York City, July 17.

Associated Hospitals of Osteopathy, New York City, July 21.

California state convention, Pasadena, June 22-26. Program chairman, P. T. Collinge, Los Angeles.

Colorado state convention, Denver, June or July. Program chairman, F. E. Johnson, Colorado Springs.

Eastern Osteopathic Association, Hotel Pennsylvania, New York City, March 28, 29. Program chairman, R. McFarlane Tilley, Brooklyn, N. Y.

Florida state convention, Daytona Beach, April 25, 26. Program chairman, L. A. Robinson, Daytona Beach.

Georgia state convention, Columbus, June. Program chairman, M. W. Henderson, Atlanta.

Illinois state convention, Hotel LaSalle, Chicago, May, 17-19. General convention chairman, Fred Shain, Chicago.

Indiana state convention, Hotel Lincoln, Indianapolis, October 7, 8. Program chairman, Paul van B. Allen, Indianapolis.

International Society of Osteopathic Ophthalmology and Otolaryngology, Philadelphia, July, 13-15.

Iowa state convention, Hotel Savery, Des Moines, May 14, 15. Program chairman, W. C. Chappell, Mason City.

Kansas state convention, Salina, October 13-15. Program chairman, Lawton M. Hanna, Clay Center.

Kentucky state convention, Louisville, October 15, 16. Program chairman, O. C. Robertson, Owensboro.

Louisiana state semiannual convention, Alexandria, second week of April. Program chairman, E. A. Stanton, Crowley.

Middle Atlantic States convention, Richmond, Va.

Minnesota state convention, Hotel Radisson, Minneapolis, May 1, 2. Program chairman, Grace Meyers, Minneapolis.

Missouri state convention, St. Louis, October 16-18. Program chairman, Collin Brooke, St. Louis.

Montana state convention, Miles City, September. Program chairmen, F. L. Anderson and J. R. Mathis, both of Miles City.

National Board of Examiners for Osteopathic Physicians and Surgeons, New York City, July 19.

Nebraska state convention, Omaha, September.

New England Osteopathic Association, Biltmore Hotel, Providence, R. I., May 1, 2. Program chairman, Gervase C. Flick, Jamaica Plain, Boston, Mass.

New Hampshire state convention, Manchester, April 18. Program chairmen, Osmond R. Strong, Concord, and Kenneth Steady, Portsmouth.

New Jersey state convention, May 13. Program chairman, Harold L. Colburn, Montclair.

New Mexico semiannual meeting, Raton, April or May. Program chairman, Caroline C. McCune, Santa Fe.

North Carolina state convention, Southern Pines, April.

Ohio state convention, Hotel Gibson, Cincinnati, May 17-19. General convention chairman, C. A. Ross, Cincinnati.

Oklahoma state convention, Tulsa, April.

Oregon state convention, Medford.

Osteopathic Women's National Association, New York City, the week of July 19. General program chairman, Mary Giddings, Cleveland.

South Dakota, Deadwood.

Texas state convention, Dallas, June 4-6. Program chairman, Chester L. Farquharson, Houston.

Utah state convention, Salt Lake City, June.

Vermont state convention, Montpelier, October. Program chairman, H. I. Slocum, Middlebury.

Virginia semiannual meeting, Richmond, May 2. Program chairman, F. D. Swope, Alexandria.

Washington state convention, Walla Walla, late May or early June.

West Virginia state convention, Wheeling, June. Program chairman, Albert Graham, Wheeling.

Official and Affiliated Organizations

ARKANSAS

Twin City Osteopathic Association

A meeting was held on February 8. D. A. English, Texarkana, Ark., discussed, "The Reproductive System in Health and Disease," and Charles A. Champlin, Hope, spoke on "Treatment of Burns."

CALIFORNIA

Citrus Belt Branch

The regular monthly meeting was held on January 16 at Colton. Charles E. Atkins, Pasadena, spoke on "Orthopedic Problems."

Glendale Branch

A meeting was held on January 29.

Hollywood Osteopathic Luncheon Club

At a meeting held on February 4, Thomas R. Thorburn, New York City, A.O.A. President, spoke on "Fatigue." Carle H. Phinney, Los Angeles, reported on the progress of the College of Osteopathic Physicians and Surgeons.

Long Beach Branch

At a meeting held on January 28, Ralph W. Rice, Pasadena, spoke on the osteopathic lesion and illustrated his talk with lantern slides.

At the February meeting Dain L. Tasker, Los Angeles, was scheduled to speak on roentgenology.

Northern Section

The mid-winter meeting was held on February 1 at San Francisco with Thomas R. Thorburn, New York City, A.O.A. President, as the principal speaker. Lester R. Daniels, Sacramento, spoke on "Athletic Injuries," Carter H. Downing, San Francisco, on "Posture," H. H. Freyette, San Mateo, on "Specific Therapy," and Glen D. Cayler, Los Angeles, reviewed legislative problems. Other speakers included: Carle H. Phinney, Edward T. Abbott, and W. W. W. Pritchard, all of Los Angeles. The film, "Our American Feet," was shown.

Oakland Osteopathic Luncheon Club

Meetings were held on January 21, 28 and February 4.

Orange County Branch

A meeting was held on January 9 at Santa Ana. Wade H. Morris, Los Angeles, spoke on the diagnosis and treatment of pneumonia. Julia Hinrichs, Santa Ana, led a discussion on the subject.

The February meeting was scheduled to be held on the 13th. Lorenzo Whiting, Los Angeles, was to speak on "Endocrinology."

Pasadena Branch

At a dinner meeting held on January 16, Floyd P. St. Clair, Los Angeles, spoke on "Morbid Anatomy of the Foot and Ankle."

Sacramento Valley Branch

A meeting was held on January 13. Edward B. Jones, E. G. Bashor, and Carle H. Phinney, all of Los Angeles, were the speakers.

San Fernando Valley Branch

A dinner meeting was held on January 14. W. W. W. Pritchard, Los Angeles, spoke on "The Autonomic Nervous System." Edward S. Merrill, Los Angeles, discussed diseases of this system.

San Joaquin Valley Branch

At a meeting held on February 2 at Fresno, Thomas R. Thorburn, New York City, A.O.A. President, gave an address entitled "Let's Tell the Public."

Southern Section

The mid-winter meeting was held on February 3 at Los Angeles. The following program was presented: "Diaphragmatic Exercises in Postural Defects," Charles E. Atkins, Pasadena; "Osteopathic Education," Edward T. Abbott, Los Angeles; "Our National Outlook," and "Fatigue and the Physician," Thomas R. Thorburn, New York City, A.O.A. President; "Osteopathic Management of Chronic Arthritis," Charles H. Spencer, Los Angeles; "Osteopathy and State Medicine," Glen D. Cayler, Los Angeles; "Osteomyelitis," Carle H. Phinney, Los Angeles; "Encephalography in Diagnosis and Treatment," K. Grosvenor Bailey, Los Angeles; "Newer Aspects of Vitamin Therapy," Grace B. Bell, Los Angeles.

Tri-Counties Branch

T. W. McAllister, Hollywood, addressed a meeting held on January 18. His subject was "Diabetes."

CONNECTICUT

State Society

The following officers were reelected on November 16: President, James T. Berry, Hartford; vice president, J. T. Calmar, Stratford; secretary, Earle H. Brett, New Haven; treasurer, F. W. Adams, Middletown. The following committee chairmen have been appointed: Membership, Dr. Calmar; public relations, R. E. Underwood, Middletown; legislation, C. A. Clark, Hartford.

A meeting was held on February 1, at Stratford. The following program was presented: "The Diagnosis of Rectal Diseases," H. W. Stippich, Meriden; "Ambulatory and Institutional Treatment of Arthritis," C. T. Holbrook, East Haven; "Neurasthenia-Psychasthenia," Dr. Brett; "Blood Pressure," T. J. Ryan, Waterbury; roentgenology, J. F. MacNish, M.D., New Haven.

FLORIDA

State Association

Mildred Reay, Daytona Beach, has recently been appointed publicity chairman.

Lake County Association of Osteopathic Physicians and Surgeons

The following officers were elected on February 11: President, E. L. Schumacher, Eustis, reelected; vice president, C. S. Ball, Eustis; secretary-treasurer, G. A. Richardson, Mt. Dora, reelected. Committee chairmen have been appointed as follows: Membership, professional education, publicity, legislation, and displays at fairs and expositions, Dr. Schumacher; hospitals, censorship, public health and education, clinics, and professional development, Dr. Richardson; student recruiting, industrial and institutional service, statistics, convention program and arrangements, Dr. Ball.

Pinellas County Osteopathic Society

Florence M. Town, St. Petersburg, reports that at a meeting held on January 8 at St. Petersburg, S. L. Gants, Providence, R. I., talked on and demonstrated rib lesions, and James A. Stinson, St. Petersburg, spoke on "Injuries in Athletics."

At the January 22 meeting Hugh T. Wise, Rockford, spoke on legislation.

The February meeting was scheduled to be held on the 5th.

Polk County Osteopathic Medical Society

A meeting was held on January 29 at Lakeland. Byron H. Comstock, Lakeland, presented a clinic case. A round table discussion followed.

Volusia County Osteopathic Association

A meeting was held on February 4 at Daytona Beach to consider plans for entertaining those who attend the annual state association convention.

IDAHO

State Association

A meeting was held on January 27 at Boise. Thomas R. Thorburn, New York City, A.O.A. President, described the treatment of infections of the eye, nose and throat.

ILLINOIS

Chicago Osteopathic Association

F. B. Shain, Chicago, reports that a meeting was held on February 6. W. Don Craske, Chicago, spoke on "Interpretation of Cardiograms."

Chicago—North Shore Osteopathic Society

G. H. Smith, Evanston, reports that at a meeting held on February 7, O. E. Andres, Evanston, spoke on "Friendly Fever."

Chicago—West Suburban Osteopathic Society

A meeting was held on February 15 at Oak Park. Ray G. Hulburt, Chicago, A.O.A. Editor, spoke on "Personal Responsibility for the Place of Osteopathy in Our Changing Social Order."

Third District Illinois Osteopathic Association

A meeting was held on January 23 at Monmouth. E. P. Wright, Belvidere, spoke on "Endocrinology."

Fourth District Illinois Osteopathic Association

A meeting was held on January 16 at Peoria. R. H. Wahl, Macon, Mo., discussed "Osteopathic Treatment for Nervous and Mental Diseases," Russell C. Slater, Macon, Mo., spoke on "Interpretation of the Schilling Blood Count," and E. C. Andrews, Ottawa, spoke on the proof of the efficacy of thermogenic therapy in rheumatic conditions.

Sixth District Illinois Osteopathic Association

At a meeting held on January 15 at Springfield, Russell C. Slater, Macon, Mo., spoke on "The Schilling Blood Count," and R. H. Wahl, Macon, Mo., on "Osteopathic Care of the Mentally Sick."

The following officers were elected: President, L. E. Staff, Jacksonville; secretary-treasurer, W. J. Trainor, Springfield, re-elected.

INDIANA

Northern Indiana Osteopathic Association

A meeting was held on January 15 at South Bend. V. B. Wolfe, Walkerton, and E. C. Peterson, La Porte, were the speakers.

On January 29 a special meeting was held in honor of Thomas R. Thorburn, New York City, A.O.A. President.

First District Indiana Osteopathic Association

Albert G. Dannin, Indianapolis, reports that at a meeting held on February 20 at Indianapolis, M. E. Clark, Indianapolis, gave an address entitled "Looking Into the Future."

IOWA

Lyceum Circuit

Another speaking circuit is scheduled to start the first week in March.

Polk County Osteopathic Association

A meeting was held on January 21 at Des Moines. John H. Styles, Jr., Kansas City, Mo., was the speaker.

Story County Osteopathic Association

At an organization meeting held on December 5 at Ames, the following officers were elected: President, Martin Biddison, Nevada, and secretary-treasurer, H. L. Gulden, Ames.

KANSAS

Arkansas Valley Society of Osteopathic Physicians and Surgeons

Thomas B. Powell, Larned, reports that a meeting was held on January 30 at Lewis. B. L. Gleason, Larned, spoke on state and local affairs, and a discussion followed. H. H. Mettling, Belpre, spoke on, "The Use of Alkalinizing Agents in the Treatment of Disease."

The February meeting was scheduled to be held on the 27th at Dodge City. C. Frederick Smith, Kinsley, was to be the speaker.

Dickinson County Osteopathic Association

The present officers are: President, W. M. Koons, Herington; secretary-treasurer, A. H. Domann, Enterprise. The committee chairmen are: Dr. Koons, professional and public affairs, and legislation; L. A. Moore, Herington, hospitals; Dr. Domann, program; S. M. Howard, Herington, public health and education; W. L. Edwards, Abilene, student recruiting; E. F. Stark, Abilene, clinics.

Eastern Kansas Osteopathic Society

H. J. Johnson, Waverly, reports that a meeting was held on January 16 at Iola. H. C. Wallace, Wichita, spoke on "Diseases of the Upper Right Quadrant of the Abdomen." A discussion on the legal situation in Kansas followed.

The following officers were elected: President, H. L. Shade, La Cygne; vice president, A. B. Twadell, Iola; secretary-treasurer, Dr. Johnson.

On February 13 a meeting was held at Burlington. Frederick J. Cohen, Wichita, spoke on "The Common Cold," and "Slow Death from Diseased Sinus," and C. A. Tedrick, Wichita, on diagnosis of diseased sinus, illustrating the talk with x-rays.

The March meeting is scheduled to be held on the 12th at Ottawa.

Southern Kansas Osteopathic Association

A meeting was held on February 12 at Kingman. R. Raymond Wallace, Caldwell, spoke on "Toxicology."

Southwestern Kansas Society of Osteopathic Physicians and Surgeons

The following officers were elected on December 10: President, O. L. Hutchins, Ulysses, reelected; vice president, Roy A. Leopold, Garden City; secretary-treasurer, V. A. Leopold, Garden City, reelected. The following committee chairmen have been appointed: Membership, public health and education, and publicity, A. B. Slater, Lakin; professional education, statistics, and professional development, Eugene F. Pellette, Liberal; hospitals, censorship, and legislation, V. A. Leopold, Garden City; student recruiting, W. C. Terry, Sublette; industrial and institutional service, Roy A. Leopold, Garden City; clinics, Robert M. Noll, Leoti; convention program, Oscar C. Kappler, Liberal.

A meeting was held on January 14 at Garden City.

Wichita Osteopathic Society

Ray E. McFarland, Wichita, reports that a cooperative dinner meeting was held on January 7 in conjunction with the Wichita Osteopathic Women's Club.

At the February 4 meeting, S. H. Nolen, Wichita, spoke of the program for the coming year.

KENTUCKY

Jefferson County Osteopathic Society

A meeting was held on February 7 at Louisville. Nora B. Pherigo-Baird spoke on medical observations made during her trip around the world, with special mention of clinics in India.

LOUISIANA

Southwest Louisiana Osteopathic Association

A meeting was held on January 11 at De Ridder. The following officers were elected: President, A. E. Stanton, Crowley; vice president, J. Miller Forcade, De Ridder; secretary-treasurer, James R. Kidwell, Baton Rouge.

A discussion of the various branches of technic followed.

MAINE

Eastern Maine Osteopathic Society

The officers were reported in THE JOURNAL for February. Charles A. Metcalf, Bangor, was appointed clinics chairman, and Arthur G. Dearborn, Bangor, publicity chairman.

York County Osteopathic Society

A meeting was held on January 30 at Saco. E. S. Winslow, Portland, spoke on "The General Practitioner's Examination of Rectal Conditions."

The February meeting was scheduled to be held on the 27th at Saco.

MASSACHUSETTS

State Society

Based on a report in the *Boston Globe* for January 12, THE JOURNAL last month published a list of newly elected officers. Later information from the secretary of the state society calls for a correction: Last year's officers were re-elected: President, Paul G. Norris, Lynn; vice president, Laurence M. Blanke, Dedham; secretary, Ernest A. Marcoux, Newton; treasurer, Olive B. Williams, Worcester. The following committee chairmen have been appointed: Public relations, Clifford S. Parsons, New Bedford; student campaign, Mildred E. Greene, Waltham; publicity, Alexander B. Russell, Springfield; public health, Manford R. Spalding, Auburn; industrial and institutional service, Allen B. Ames, Fitchburg; professional development, Laurence M. Blanke, Dedham; professional education, Lawrence F. Walsh, Cambridge; membership, Harry E. Cash, Newton Center; hospitals, Frank M. Vaughan, Boston; ethics, M. T. Mayes, Springfield; statistics, Wallace P. Muir, Boston; child welfare, Arthur W. Summers, Cambridge; legislation, Charles R. Wakeling, Boston; program, Frank W. Laroe, Beverly.

Middlesex South Osteopathic Society

Harry E. Cash, Newton Center, reports that a dinner meeting was held on February 6 at Cambridge. Cecile Moore, Brookline, spoke on "Contraceptive Methods."

Worcester District Osteopathic Society

Harold P. Frost, Worcester, reports that a meeting was held on February 5. C. W. Bruninghaus, Worcester, spoke on "Diabetes."

MICHIGAN

Northeastern Michigan Association of Osteopathic Physicians and Surgeons

The following officers were elected on January 8: President, M. H. Crapo, Mt. Pleasant; vice president, Samuel E. Taylor, Riverdale; secretary-treasurer, M. L. Wirt, Fairgrove. The following committee chairmen have been appointed: Program, R. F. Kenaga, Mt. Pleasant; hospitals, G. O. Rossman, Saginaw; legislation, Edward A. Ward, Saginaw.

Oakland County Osteopathic Association

At a meeting held on January 16, John P. Wood, Birmingham, and Sherwood J. Nye, Pontiac, spoke on state legislative affairs and R. E. Everall, Birmingham, presented a paper on the treatment of arthritis.

The following officers were elected: President, H. J. Brown, Oxford; vice president, L. K. Mathews, Pontiac; secretary-treasurer, H. D. Hutt, Holly.

MINNESOTA

Minneapolis Osteopathic Society

Elnora S. Ervin, Minneapolis, reports that a meeting was held on February 5. Hamlin Mattson, M.D., Minneapolis, spoke on "Appendicitis—Differential Diagnosis."

MISSOURI

Central Missouri Osteopathic Association

The regular monthly meeting was held on January 16 at Mexico. A round table discussion was conducted.

Osage Valley Osteopathic Association

At a meeting held on January 16 at Petits, Earl Laughlin, Jr., Kirksville, led a discussion on pneumonia.

Southeast Missouri Osteopathic Association

At a meeting held on February 9 at Perryville, Walter E. Bailey, St. Louis, was the principal speaker.

NEBRASKA

Southwestern Nebraska—Northwestern Kansas Osteopathic Society

The following officers were elected on January 26: President, J. P. Pattin, Arapahoe; vice president, George C. Widney, Lexington; secretary-treasurer, Ivan P. Lamb, Palisade.

The March meeting is scheduled to be held on the 8th at McCook.

NEW JERSEY

Bergen County Osteopathic Society

The regular meeting was held on February 4 at Hackensack. Donald S. Terhune, Teaneck, spoke on "Hospitalization," and M. J. Schoonmaker, Hackensack, on "Ultra-Short and Short-Wave Therapy."

Hudson County Osteopathic Society

Officers were reported in THE JOURNAL for January, and committee chairmen were reported in the February number. Membership chairman is C. B. Ackley, Union City, instead of F. P. Manchester, Bayonne, as reported in the February JOURNAL. Additional committee chairmen are: Hospitals, D. P. Donovan, Bayonne; censorship, W. F. True, Bayonne, Dr. Manchester, and Dr. Ackley; student recruiting, Dr. Manchester; public health and education, A. J. Molyneux, Jersey City; industrial and institutional service, David Steinbaum, Bayonne; clinics, E. K. Stretch, Union City; publicity, Dr. Molyneux; statistics, R. L. Sifrit, Hoboken; convention arrangements, Drs. True and Donovan; professional development, Dr. Ackley; displays at Fairs and Expositions, Cora Belle Molyneux, Jersey City.

The February meeting was held at Bayonne. Plans for Normal Spine Week were discussed. Legislative problems were considered.

Morris County Osteopathic Society

The officers were reported in THE JOURNAL for February. The following committee chairmen have been appointed: Membership, and professional education, W. H. Wiggins, Boonton; hospitals, censorship, and legislation, H. Thurston Maxwell, Morristown; student recruiting, T. L. Northup, Morristown; public health and education, George H. Pike, Chatham; clinics, Alfred W. Reger, Dover; publicity, John Gauer, Jr., Denville; statistics, M. J. Williams, Chatham.

NEW MEXICO

State Association

A meeting was held on February 8 at Albuquerque. Thomas R. Thorburn, New York City, A.O.A. President, spoke on "Fatigue and the Physician."

NEW YORK

Binghamton District Osteopathic Society

The following officers were elected in December: President, Lincoln A. Lewis, and secretary-treasurer, J. S. Flannigan, both of Binghamton. E. W. Cleveland, Binghamton, was appointed chairman of professional education and Dr. Flannigan chairman of publicity.

Hudson River North Osteopathic Society

Mary E. Stearns, Saratoga, reports that a meeting was held on February 1 at Albany. T. Paul Davis, Albany, spoke on "Analysis of Pain and Its Value as a Symptom."

The March meeting is scheduled to be held on the 7th at Watervliet.

Nassau County Osteopathic Society

A meeting was held on December 3 at Rockville Centre. C. K. Smith, Freeport, discussed his most interesting case of the month, and a paper was presented by L. H. Copeley, Garden City.

At a meeting held on February 4 at Hempstead, a discussion was conducted on "Laboratory Methods in General Osteopathic Practice." Mr. Warren Bell of the Diagnostic Laboratory of Freeport discussed laboratory technic and methods in diagnosing blood conditions.

The following officers were elected: President, Dr. Copeley; vice president, Evan G. Beach, Hempstead; secretary, Dr. Smith; treasurer, K. Porter Edwards, Great Neck.

OHIO

Second (Cleveland) District Osteopathic Society

At the January 6 meeting, Ralph P. Baker, Philadelphia, spoke on "The Diagnosis of Renal Pathology."

Charles A. Purdum, Cleveland, reports that the February meeting was held on the 3rd. John E. Rauschkolb, M.D., Cleveland, talked on the differential diagnosis of the skin lesions of the acute exanthemata. A discussion followed.

Third (Akron) District Osteopathic Society

L. H. Anderson, Akron, reports that a meeting was held on February 5 at Canton. Gerald M. Stevenson, Kent, spoke on "Eugenics as Viewed by the Physician."

Fourth (Columbus or Central) Ohio Osteopathic Society

At the January 23 meeting, Alice Potter Bauer, Delaware, was the principal speaker.

Frances L. White, Columbus, reports that a meeting was held on February 6. C. M. LaRue, Columbus, con-

ducted a symposium on pneumonia; A. P. Bumstead, Columbus, spoke on etiology; W. F. Tieman, Newark, on pathology; R. G. Reesman, Lancaster, diagnosis; and W. S. McCleery, Delaware, treatment.

Fifth (Dayton) District Osteopathic Society

E. E. Leonard, Dayton, reports that a meeting was held on February 19. C. B. Blakeslee, Indianapolis, spoke on "Pediatrics."

Sixth (Cincinnati) Society of Osteopathic Physicians and Surgeons

At the February 13 meeting at Alms, H. M. Williams, Lebanon, was the principal speaker.

OKLAHOMA

South-Central District of Oklahoma Osteopathic Association

The January meeting was held in conjunction with the Oklahoma County Osteopathic Association. C. A. Tedrick, Wichita, Kans., and R. H. Peterson, Wichita Falls, Tex., were the principal speakers.

Tulsa District Osteopathic Association

Harry E. Green, Tulsa, reports that a meeting was held on February 6. E. P. Malone, Miami, spoke on "Industrial Back Injuries." The following case histories were reported: "Lobar Pneumonia with Effusion," by F. C. Card, and John E. Halladay, both of Tulsa, and "Brain Injuries," by G. H. Meyers, Tulsa.

OREGON

Southern Oregon Osteopathic Society

The officers were reported in THE JOURNAL for February. The following committee chairmen have been appointed: Professional education and clinics, Blaine B. Pruitt, Grants Pass; hospitals and legislation, W. W. Howard, Medford; censorship and convention program, Bertha E. Sawyer, Ashland; student recruiting and industrial and institutional service, Russell R. Sherwood, Medford; public health and education, Frank G. Carlow, Medford; publicity and professional development, Eva M. Carlow, Medford.

PENNSYLVANIA

State Association

George W. Krohn, Harrisburg, has been selected by the council to serve as treasurer until his successor is elected.

Clarion County Osteopathic Medical Society

The following officers were elected on January 2: President M. F. Bashline, New Bethlehem; vice president, C. B. Long, Clarion; secretary-treasurer, Floyd B. Masters, Knox. The following committee chairmen have been appointed: Membership, professional education, industrial and institutional service, convention program, and legislation, Dr. Long; hospitals, clinics, and professional development, Dr. Bashline; censorship, student recruiting, convention arrangements, and displays at fairs and expositions, H. E. Stahlman, Clarion; public health and education, publicity, and statistics, Dr. Masters.

Lancaster County Osteopathic Society

W. E. Donohoe, Lancaster, reports that at a meeting held on January 27, the following officers were elected: President, S. E. Yoder; vice president, Wilbur P. Lutz; secretary-treasurer, Dr. Donohoe, all of Lancaster. Ralph P. Baker, George W. Gerlach and Warren A. Sherwood, all of Lancaster, were appointed to the hospital advisory committee.

Philadelphia County Osteopathic Association

A meeting was held on January 16. Dr. Alexander Randall, professor of urology at the University of Pennsylvania, was the principal speaker.

RHODE ISLAND

State Society

At a meeting held on February 13, Perrin T. Wilson, Cambridge, Mass., spoke on "Pneumonia."

Newport County Osteopathic Society

At a meeting held on January 25, Paul J. Dodge, Providence, spoke on "The Differential Diagnosis of Acute Conditions in the Ear, Nose and Sinuses."

SOUTH DAKOTA

Southeastern South Dakota Osteopathic Association

The next meeting is scheduled to be held on March 8 at Beresford.

TEXAS

East Texas Osteopathic Association

(See Smith County Osteopathic Society)

D. A. Wolfe, Athens, reports that a meeting was held on December 18 at Corsicana. J. R. Alexander, Houston, Samuel F. Sparks, Dallas, and Sam L. Scothorn, Dallas, were the principal speakers. The films, "Our American Feet," and "Low Forceps Delivery," were shown.

The March meeting is scheduled to be held at Longview.

Lower Rio Grande Valley Osteopathic Association

Jacobine Kruze, San Benito, reports that a meeting was held on January 25 at Mercedes.

The following committees were appointed: Program, A. L. Kline, Mercedes, Mabel Martin, Weslaco, and C. H. Chandler, Harlingen; publicity, Dr. Kruze; student recruiting, Lloyd W. Davis, McAllen; legislation and public health, M. B. Harris, Mission, and R. E. Adkins, Harlingen.

Dr. Kline led round table discussions on various subjects.

Smith County Osteopathic Society

This society is sponsoring a series of bi-monthly education meetings by means of motion picture films for members of the East Texas Osteopathic Association. Scheduled on the program are a group of surgical pictures, such as, elbow surgery, gastric ulcer, hydrocele, appendectomy, posterior gastroenterotomy and knee surgery, and also all available osteopathic films, as well as some on obstetrics and pediatrics.

The first meeting was held on February 21 at Tyler.

WASHINGTON

Thomas R. Thorburn, New York City, A.O.A. President, spoke before osteopathic physicians of eastern and southeastern Washington at Walla Walla on January 28. His subject was "The Outlook of the Profession."

On January 29 he spoke before the western Washington and British Columbia osteopathic physicians at Seattle. At that meeting he spoke on "The General Practitioner and the Nose and Throat."

CANADA

British Columbia Osteopathic Association

(See Washington)

Special and Specialty Groups

American Osteopathic Society of Ambulant Surgery Ohio Branch

At an all-day conference held on January 12, the following officers were elected: President, M. A. Brandon, Lorain; vice president, E. P. Benedict, Columbus; secretary-treasurer, B. K. Powell, Lorain.

Eastern Osteopathic Association

The following program is scheduled to be presented at the sixteenth annual convention to be held March 28 and 29 at the Pennsylvania Hotel, New York City: March 28—"Tell Your Patient the Truth," Wallace M. Pearson, Kansas City, Mo.; "Prenatal Care," Lionel J. Gorman, Boston; "The Orthodynamics of Posture," Carter H. Downing, San Francisco, Calif.; "Practical Surgical Diagnosis," George M. Laughlin, Kirksville, Mo.; "The Osteopathic Aspect of Pediatrics," Ruth Elizabeth Tinley, Philadelphia. March 29—"Reminiscences About A. T. Still and Some of His Early Work," Dr. Laughlin; "Why Were the Late Nineties Spoken of as the Golden Age of Osteopathy?" Harry M. Vastine, Harrisburg, Pa.; "Osteopathic Education in Our Present Program," John E. Rogers, Oshkosh, Wis.; "Address by the President of the A.O.A.," Thomas R. Thorburn, New York City; "The Shoulder (Osteopathic Complications and Treatment)," Dr. Downing; "Proctology," H. Van Arsdale Hillman, New York City; "Fifteen Bottles on a Four Foot Shelf," Dr. Pearson; P. E. Roscoe, Cleveland, subject to be announced.

Lansing (Mich.) Osteopathic Laymen's League

At a meeting held on January 25, James Day, Detroit, was the principal speaker.

Western Osteopathic Association

The western circuit this year was undertaken by Thomas R. Thorburn, New York City, President of the American Osteopathic Association. Addresses were made under the auspices of the various osteopathic association at Boise, Idaho, January 27; Walla Walla, Wash., January 28; Seattle, January 29; Portland, Ore., January 30; San Francisco, Calif., February 1; Los Angeles, February 3.

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2. Supplies the body with more oxygen.
3. Mobilizes the lower ribs.
4. Increases the white cell count.
5. Increases the opsonic index.
6. Increases the agglutinative power of body serum
7. Increases the bacteriolytic power.
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